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CONTENTS

An Asterisk (*) denotes an illustrated article.

EDITORIALS—

Briefly Told 225

Death of Mr. William Gardner—Additional Honors for Dr. Auer—Notes.

CORRESPONDENCE—

To Locate and Remedy a Leak in the Cup of a Gasholder..... 226

Amending the List, by Mr. Shelton, of the Papers Read before the American and Western Associations..... 226

Sixth Annual Meeting, Pacific Coast Gas Association—Official Report—Revised by the Secretary..... 226

First Day, Morning Session—Report of Secretary and Treasurer—Report of Board of Directors—Report of Committee on Standard Dimensions—Discussion—Some Odds and Ends—Inaugural Address—Election of Officers—Action on the Proposed Amendments to the Constitution—Roll Call—Experiences, Read by Mr. John Clements—Discussion—First Day, Afternoon Session—Gas in Competition with Electricity by Water Power, by Mr. A. Gutsch—Discussion—Lubrication in the Gas Business, by Mr. O. M. Gregory.

Coal Washing in Virginia..... 234

Experience with Street Lighting at Munich, by Means of Incandescent Gas Lamps..... 235

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 235

Change in Control, Williamsport, Pa.—New Plant for the Kenosha (Wis.) Company—Mr. Carl H. Graf Takes Charge at Hackensack, N. J.—Improving the Service at Yonkers, N.Y.—Extending the Main System, Little Rock, Ark.—Amending the Gas Rate, Kingston, N.Y.—Changes at Huntsville, Ala.—Office Building for the Municipal Company, Albany, N. Y.—Gas Ordinance, Lawrence, Kas.—Cheaper Gas for Beverly, Mass.—Ditto, Easthampton, Mass.—Annual Meeting, New Bedford, Mass.—Torrington, Conn., to Have a Gas Plant—Annual Meeting, Lexington, Mass.—Decision of the Board of Gas and Electric Light Commissioners Affecting Rates for Electric Lighting, Hudson, Mass.—And Other Items.

The Market for Gas Securities..... 237

BRIEFLY TOLD.

DEATH OF MR. WILLIAM GARDNER.—Another of the pioneers who blazed the route of the present magnitude of the American gas industry has gone to final rest; and in naming Mr. William Gardner as a pioneer in the ways that led to the expansion we now witness in the gas trade we report the simple truth, as those who have any penchant for hunting through records may readily verify. Mr. William Gardner died in Colorado Springs, Col., the morning of August 5th, and the end was the termination of an illness which lasted for some years, although it was not until a year or so ago that he removed from his Pittsburg (Pa.) home to the Springs, in the hope that its altitude, and the companionship of his son (who has resided some time in Colorado Springs for the benefit of his health) would alleviate if not cure the malady from which he suffered. Unfortunately, such hope was not realized, as the fateful record shows. Deceased was born in Omagh, the historic and beautiful capital of Tyrone county, Ireland, the 22d of June, 1835. His parents emigrated to Philadelphia nine years later, and in Philadelphia young Gardner's education was completed. The circumstances of his life obliged him to early try his chance with others in the field of work, and a course of practical mechanical training—first at the Bush Hill iron works, of James Moore, and later on in the Baldwin locomotive factories—quite fitted him for a career in gas works construction. In 1856, under the tutelage of the concern that eventually developed the genius of the Messrs. Bartol, Mr. Gardner went to Cuba, there to superintend the construction of the first plants for the sensible refining of sugar cane, which sensible reduction is traceable to the genius of the elder Wm. Bartol, who, with his brother and sons, later on was famous in developing the gas business of this country. Towards the close of 1859 Mr. Gardner went to Portland, Ore., there to superintend the construction of the works of the Portland Gas Company, which had been chartered in 1859, with a capital of $50,000—Portland at that time had a population of 3,500, and the Company had the right to exact $8 per 1,000 for gas. On the completion of the Portland works Mr. Gardner remained as manager thereof for some months, relinquishing that duty to overhaul the gas plant at Sacramento, Cal. Returning east, in 1862, he rebuilt the plant of the Johnstown (Pa.) Company, and between that time and 1864 he was concerned in the reconstruction of the plants at Akron and Canton, O. In 1864 he established a factory at Lockport, Pa., for the manufacture of clay gas retorts and other clay specialties of kindred or assisting nature, which business he actively supervised until 1883, when he was succeeded in its management by his son, Mr. James Gardner, Jr. Between times he did much in the line of consulting gas engineering, perhaps his most notable achievement in that direction having been his active voice and close participation in putting up (1893-'94) the new model plant of the Altoona (Pa.) Gas Company. Mr. Gardner was elected to membership in the American Gas Light Association, on the occasion of its third semi-annual meeting (Washington, D. C., May, 1875), and was always a firm supporter of its best aims and purposes. He is survived by his widow and one son, Mr. James Gardner, Jr. Mr. Gardner's bodily frame was moved by a mind broad, free, earnest and capable, and this brief minute to his life and work would be very incomplete did we not say that his record was that of one who lived wisely, well and worthily.

ADDITIONAL HONORS FOR DR. AUER.—At the 38th General Meeting of the General Association of German Gas and Water Engineers (held in Nuremburg, June 29 and 30 and July 1), Dr. Karl Auer, Ritter von Welsbach, was elected to Honorary Membership in the Society. This action goes to show that sometimes glory and titles are awarded to a plodding scientist while he lives. In connection with this it does not seem out of place to suggest that the name of Dr. Karl Auer, Knight of Welsbach, would not be out of place on the roster of Honorary Membership of the American Association.

NOTES.—At the annual meeting of the Oakland (Cal.) Gas Light and Heat Company the officers chosen were: Directors, D. E. Martin, Jas. Moore, Thomas Crellin, John T. Wright and John A. Britton; President, D. E. Martin; Vice-President, John T. Wright; Secretary and General Manager, John A. Britton.——The initial experiment with Welsbach incandescent lamps, for the lighting of the thoroughfares of Richmond, Va., has been so successful that it is to be largely extended. ——Under the franchise recently granted to the proprietors of the Waukegan (Ills.) Gas and Fuel Company the plant must be in operation by Oct. 15. The concern is capitalized in $75,000.

Correspondence

[The JOURNAL is not responsible for the opinions expressed by correspondents.]

To Locate and Remedy a Leak in the Cup of a Gasholder.

NEW ORLEANS GAS LIGHT COMPANY,
NEW ORLEANS, LA., Aug. 9, 1898.

To the Editors AMERICAN GAS LIGHT JOURNAL:

Thanking Messrs. J. P. Gill and "W. K." for their advice, published in the JOURNAL for August 1st, for locating a leak in the cup of a gasholder. I thought the question as put would be understood by those acquainted with the construction and use of a gasholder cup or grip. A leak in the holder sheet of the cup of the top section, or in the grip sheet of the cup of the bottom section, can easily be detected. Not finding a leak in either, nor in the bottom of the inner cup, we concluded it was in the grip sheet of this cup. We located it one calm morning, when the bottom section was up about 6 feet. The water from the cup could be heard dropping on the water in the tank. We bored holes on the top of the bottom section's cup, and put some Mississippi "mud sausages" into inner cup, tamped them, and the water ceased dropping. Sawdust or bran was of no use. Mr. Gill's remedy we did not try.

We sealed the bottom section, let the top section in water two plates, lowered the water line 12 inches, cut out a piece (4 inches by 16 inches) of the bottom section, refilled the tank with water, raised the top section until the grip sheets touched bottom of cup—the inner cup just sealed, so that no gas came through the hole.

We found the leak was caused through rivets being out of the joint where the grip sheets of the inner cup lapped. The holes were tapped, and special stud bolts put in with special putty in the joints. A plate was put on the 4-inch by 16-inch hole, and the holder cupped. So far the joint seems to be tight, as the cup holds the water. The holder has been working 25 years. The piece cut out of sheet looks as if it would last 25 years longer.

Hoping the information may be of use, I remain, yours truly,

F. CARROLL, Mgr., New Orleans Gas Light Company.

Amending the List, by Mr. Shelton, of the Papers Read before the American and Western Associations.

NORFOLK, VA., August 9, 1898.

To the Editors AMERICAN GAS LIGHT JOURNAL:

In your "List of All the Papers Read before the American and Western Gas Associations," compiled by Mr. F. H. Shelton, and published in your issue of the 8th inst., I note one omission, viz.: "Hindrances to the Adoption of the Inclined Retort System in America." A paper with such title was read at the 21st annual meeting of the Western Gas Association. It was roundly discussed at said meeting and was published in your issue, dated June 20th, 1898. Another correction in Mr. Shelton's compilation affects the paper entitled "A Winter's Experience with a Springer Plant," credited to Mr. W. L. Brown; Western Association, 1889. That paper was submitted to the Board of Directors of the Western Gas Association (of which the subscriber was then a member) in the year named; but it was withdrawn by the author, and neither read nor discussed before the Association, nor published in the files of the proceedings. This can be verified by referring to the files of the JOURNAL recording the proceedings of the Western Association for the year named.

Yours very truly, FREDERICK EGNER.

[OFFICIAL REPORT—REVISED BY THE SECRETARY.]

SIXTH ANNUAL MEETING, PACIFIC COAST GAS ASSOCIATION.

HELD AT SAN FRANCISCO, CAL., JULY 19 AND 20, 1898.

FIRST DAY, MORNING SESSION, JULY 19.

The Association was called to order by the President, Mr. Frederick H. Eichbaum, of San Francisco, Cal, at 10:40 A.M.

REPORT OF SECRETARY AND TREASURER.

The Secretary read the following report, which was received and placed on file:

OAKLAND, CAL., July 19, 1898.

Gentlemen: I have the honor to submit herewith my fifth annual report as Secretary and Treasurer.

The financial statement is herewith attached showing in detail receipts of $1,179.94; disbursements, $1,127.95; balance cash on hand, $51.99. There is due and collectible from members, $190 for dues and $5 for badges.

In the matter of the publication of the book the added cost was due largely to the bulk of matter contributed at last meeting, making the book larger than was thought of. The net cost to Association was $241.58, making a trifling sum compared to the value of the book to our members. Two hundred and fifty-four copies were printed, of which 108 were distributed to members, 42 were sold, 14 were given to advertisers in book, and I have in my possession 90 copies. The book has attracted the attention of the gas world, and I have been in receipt of many complimentary notices of the work of the Association. As per my last report I had on hand one badge; purchased during year, 10; sold, 8; on hand, 3.

Membership on July 20th, 1897	92
Admitted on that date	20
Membership	112

Of this number 73 are active officers of operating gas companies in California, Utah, Nevada, Oregon and Washington, representing 43 gas companies, the other 35 members representing allied interests.

Five members are delinquent for dues and have received the notice required by the by-laws.

Respectfully submitted, JOHN A. BRITTON,
Secretary and Treasurer.

REPORT OF BOARD OF DIRECTORS.

The Secretary then read the following report of the Directors, which was accepted and its recommendations adopted:

SAN FRANCISCO, CAL., July 19, 1898.

To the Pacific Coast Gas Association: Gentlemen—Your Board of Directors beg leave to report in accordance with the requirements of by-laws. We have examined the following papers and approve of their being read:

"An Efficient Oil Heater," "Gas House Coke for Generator Fuel," "Lubrication in the Gas Business," "Some Possibilities in an Electric Lighting Station," "Coal Combustion and Smoke Prevention," "Welsbachs in Street Lighting," "Gas in Competition with Electricity by Water Power," "Should Gas Companies Do Gas Fitting?" "Reminiscences," "A Closed Purifying Box."

We have examined the financial report of the Secretary and the vouchers for payments thereto attached, and find the same true and correct. We recommend that the following applicants for membership be elected:

Geo. S. Colquhoun, Fresno Gas and Electric Light Company.
W. A. Aldrich, Spokane (Wash.) Gas Company.

Respectfully, T. D. PETCH, F. A. CRESSEY, JOHN L. HOWARD, H. P. GOODMAN, } Directors.

REPORT OF COMMITTEE ON STANDARD DIMENSIONS.

The Secretary read the report of the Committee on Standard Dimensions, as follows:

To the President and Members of the Pacific Coast Gas Association—Your Committee on Standard Dimensions recommends the adoption of the standard heaped bushel, containing 2,747.7 cubic inches, for the measurement of coke, lime, oxide of iron, sawdust and other materials used in gas works connected with our Association.

This will secure uniformity in our papers and avoid the annoyance of recalculating where measurements are made in barrels or cubic foot measures; and as it is extremely difficult to obtain a standard bushel and heap it to the standard cone, it is also recommended to use a bushel

measure made of light steel or iron, the inside dimensions of which are 14 inches in diameter and 17.8 inches deep. This contains a standard heaped bushel when filled with water.

E. C. Jones,
John L. Howard,
C. O. G. Miller,
} Committee.

Discussion.

The President—This is a matter of considerable interest, for it involves uniformity in a comparison of results. We would like to hear from any member who has anything to say on this subject.

Mr. Jones—As Chairman of the Committee, I would like to say that the standard prepared is that adopted by the American Gas Light Association, by the Society of Gas Lighting, of New York, and, I believe, by the New England Society of Gas Engineers; wherefore any measurements or comparisons in our papers would correspond with the statistics given in the papers read before the named Societies.

The President—I think it is very desirable that the recommendations of the Committee be adopted, and if any member makes a motion to that effect we will adopt those dimensions as a standard in any reports to be made to this Association.

Mr. Adams, of Portland—It always struck me that this plan of measurements in bushels, pecks and gallons was all wrong, because the pound is our unit of weight. It strikes me, whether they are uniform or not with the rest of our Associations, if we get down to the pound, so many pounds of coke and so many pounds of coal, it would be more fitting. At the same time the Committee, I have no doubt, have determined just what they thought was proper. We are certainly going to the metric system one of these days, and then we will reach the proper unit. I for one would say that the pound is the best unit at this time.

Mr. Jones—In reply to Mr. Adams, it is necessary to measure coke instead of weighing it, because the formation of coke in the retort is something similar to the popping of corn, and some coke is large of bulk while coke from other coals is very small of bulk, and it is necessary to get at the bulk of the coke; and, as coke absorbs water readily, the pound would not represent the true measurement of the coke. We measure all of our coke hot before it has been quenched and also weigh it hot.

Mr. Britton—It occurs to me that the intent of the committee has not been fully understood by the members. As I take it, it is not for the purpose of changing any of our methods of doing business with our customers at all, but for the purpose of establishing uniformity, so that when papers on subjects requiring measurements of materials are presented to the Association, there may be then a general knowledge of the standard so that the comparisons can properly be made. Now one of the standard bushels recommended, made of light iron and steel, would not cost over $2.50 or $3, and if a person is sufficiently interested in the work of the Association to prepare a paper fully stating certain results with certain materials, the object of the committee is that the author could, in the determination of those results, have this bushel adopted by the Association on hand, and when he writes or talks he does so to all members, and not alone to those who use his standard. As I understand it I do not believe the committee intended that the members should adopt the bushel as the method for the sale of coke or any thing of that kind. So it would not interfere with our business, but would simply present a uniformity of operation which would be more intelligible to those who read the papers, and read them for the purpose of learning something. Therefore I think it very wise to adopt it just as we adopted last year a standard in regard to the dimensions of flanges. I second the motion to adopt the report of the committee.

Mr. Cline—Was it the intent of the committee to include coal among other materials used in the gas works?

Mr. Britton—No; coke, lime, oxide, sawdust and other materials used in gas works.

Mr. Jones—It was not the intention of the committee that that should refer to sales of gas works products, but only to the figures needed in the preparation of papers. If a man is mixing oxide of iron, and the formula says so many barrels of sawdust and so many barrels of lime, I have found that the question was asked me what sized barrel I used—whether it was a cement barrel, or a tar barrel, or a whiskey barrel. If you have a standard measure of any account you will find it a great convenience in measuring material.

The question was put to a vote, with the result that the standard recommended by the committee was adopted.

Some Odds and Ends.

Mr. Britton—There is rather a dearth of communications at this session. I have a telegram from Mr. Gillespie, in New York, wishing the meeting success, but no others, except a letter addressed to me as Secretary of the Association, from the American Gas Light Journal. The only part of it concerning the meeting is the closing clause, in which the editors of the paper say: "We sincerely hope that the proposition to add 'electric' to the Association title will be negatived, although it looks as though it would come to pass." I do not know where they got the idea that it will come to pass, although that will come up later. Different members of the gas companies complied with my requests for information contained in the circular sent. They were very kind indeed, without knowing the purport of it. It seemed as if I asked a great many impertinent questions, and as a gas man is naturally secretive in regard to giving information, I was more than pleased with the answers received. The reasons for it will be given to morrow when I will have a compilation of the statistics of the gas companies of the Coast, which cannot but be of great information to you, and full of information to you for your future business later. I will get out an amended one, adding companies not in present list, and send it to each member. In the preparation of it I have not divulged any of the secrets of the profession, nor any material matters which would assist an opposition.

President Eichbaum then read the following

INAUGURAL ADDRESS.

[For President Eichbaum's Address, see Journal, Aug. 8, 1898, p. 190.]

On motion of Mr. Crockett, the address was received, and a vote of thanks was passed to President Eichbaum.

Election of Officers.

The Association then elected the following officers to serve during the ensuing year:

President—Charles F. Adams, Portland, Ore.
Vice-President—J. Clements, Red Bluff, Cal.
Secretary and Treasurer—Jno. A. Britton, Oakland, Cal.

On motion of Mr. Cline, the President was authorized to appoint a committee of three to name Directors for the ensuing year, the committee to report immediately after recess. The committee named by the President on such account comprised Messrs. Jones, Cushing and Fenner.

Action on the Proposed Amendments to the Constitution.

Secretary Britton then read the amendments to the constitution which were proposed at the last annual meeting, to be finally considered at this session. The wording of the amendments is as follows:

Article II.—Where word "gas" is used, add "electricity," so as to read, viz.:

Its object shall be the promotion and advancement of knowledge of the gas and electric business, including all matters relating to the construction and management of gas and electric works, and the manufacture, distribution and consumption of gas and electricity. To establish a spirit of fraternity between the members by social intercourse and friendly exchange of information on the subjects of gas and electricity.

Article III.—To be eligible as a member a person must be an active officer or employee of a gas or an electric lighting company, or a person whose pursuits are connected with supplies furnished to such companies.

By a three-fourths vote of members present at any meeting, the Astion may elect as honorary members any gentlemen whose scientific or practical knowledge in matters relating to the gas or electrical industries and whose efforts and interests in that behalf shall recommend them to the Association.

Mr. Jones—As I understand it, the committee does not anticipate the changing of the name of our Association, as has been stated.

Mr. Britton—No, sir. You note the amendment to article 3 reads: "To be eligible as a member, a person must be an active officer or employee of a gas or electric lighting company, or a person whose pursuits are connected with supplies furnished to such companies, by a three-fourth vote, etc."

Mr. Clements—Mr. President, when this amendment as a whole was offered to this Association at the last meeting, I felt at that time somewhat opposed to it, and the more I thought the matter over the more thoroughly I am convinced it would be a mistake to make this change. I have written to a number of members of the Association from time to time during the year, and I have conversed with several since I have been in the city, and the consensus of opinion appears to oppose this amendment. I jotted down a few words (not being much of an extemporaneous speaker) since I came to the city regarding my ideas in relation to this subject, and with your permission I will read them in

order to give my personal opinion and the confirmation of that opinion, by coming in contact with members, as to the proposed amendments:

Fellow-Members of the Pacific Coast Gas Association: At our last regular meeting a resolution was offered by one of our most earnest and most respected members, looking to the changing of the name and title of our Association. I am well satisfied that the gentleman who offered this resolution has now, and ever has had, the welfare of the Pacific Coast Gas Association at heart, and that he designs that the making of this change will broaden the scope of its usefulness. While he may take this view of it I cannot help but take issue with him, and say to you that I have my fears as to the ultimate result of such a change or of such an alliance.

I would not in any way discourage the formation of an electric association, if one is not already formed on the Pacific Coast; in fact, I should like very much to become a member of such, as I have the management of both kinds of lighting on a limited scale. But I fail to see the kinship between them. On the contrary, they have as a rule been found opposed to each other. While in the majority of instances they have been and are now open and avowed enemies, of late they have come somewhat closer together—not on fraternal grounds, but on the grounds of financial necessity—especially in the smaller towns where both systems could not be successfully maintained under separate managements. And as the gas plant and the gas man are both long established facts, they are the ones who have to stand the brunt of attack of the enemy, which they invariably repulse, it is true, *not* without loss, for that no intelligent gas man expects to escape.

The electric combines and electric machine selling concerns have men in the field constantly promoting schemes for the erection of lighting plants; and so we find that they must as a rule enter the field of the gas man because of the fact that wherever a town is or has been of any consequence capital has been engaged in gas manufacture. Of course competition becomes sharp and spirited, and although the new light is offered at a price far below what it is actually worth to produce it, the promoter usually finds some one to financially father his scheme. He sells his machinery at a good, round figure, and then leaves the two interested parties to furnish the light, and fight it out to the death of one or the other; and, therefore, I conclude that this Association has a field broad enough, if its members properly cultivate that field. The gas business is assailed on every hand. The oil fields have furnished no small share of the punishment that has been meted out to the gas man, but he has risen Phœnix-like from the ashes of the fires of attack, and of late is erecting great works that threaten to absorb the very oil fields themselves.

No, my friends; to my mind, we cannot add anything to our glory by adding to our numbers or changing the field of operation. We have builded here in these past five years better than we dared to dream. We have brought together, through the instrumentality of this Association, members of a craft who never would have known each other had it not been for its formation, and all of this has been brought about by the gentleman who now offers this resolution, together with his associates in the Company that has always housed and cared for us when we met in annual session. I know that he is actuated by the same liberal spirit, with the same desire for mutual benefit, and with the same goodness of heart that moved him when he was chosen our first President. And for that reason I am loath to take issue with him; but looking at it from the standpoint of a country manager, knowing, as I do, the spirit that has been engendered, the losses that have been sustained and are still to be met, I feel that we cannot afford at this time to open our doors so wide; and I now seriously conclude by expressing the hope that the initials of this Association will still remain "P. C. G. A." (Applause.)

The President—I call on Mr. Crockett for his views on the question. Believing he was the proposer of the amendment, and having heard from the opposition, we would like to hear from those who favor it.

Mr. Crockett—I do not think that at any time we contemplated changing the name of the Association. A question that occurred to me at the particular time, as this country is very remote from other portions of the United States, and the membership of these different Associations is very small, was that as almost everyone who is in the Pacific Coast Association to-day is conducting the two businesses jointly that we would get much mutual benefit by discussing the subject both ways. We all remember a great many years ago, when water gas was first talked of, that all the coal gas men in the country were very much opposed to it, and it took them a long time to be convinced that that was the proper, the cheaper and the easier way, in some places, of making gas. Now I venture to say that there are few companies in the United States that are not making some water gas. There is no question about that, the fact we should have proper competition with electric light; but as electric light is not a thing you can summarily dispose of—it is undoubtedly here to stay—and if many of us are here in that same line of business, why shouldn't we discuss questions pertaining to electricity as well as those that pertain to gas? But I do not think there is any desire by amendment to change the name of the Association. It is not a matter that I have at heart at all, and I would be perfectly willing if the members here choose to vote that proposition down. There will certainly be no feeling on my part over the outcome in any way, shape or form.

Mr. Jones—I would like to say, for the comfort of some of our good members who are electrical men, that I have read the constitution and by-laws of our Association very carefully. They give us and the Directors considerable latitude for taking in members who are electricians connected with gas companies, and under our constitution there is no reason why a paper on a purely electrical subject cannot be presented and read before this Association.

The Secretary—There will be two to-day.

Mr. Jones—And I have no doubt every member present will be glad to hear them, and will receive valuable information from them. I would not like to be understood as hinting that electricians connected with gas companies are out of place in our Association, because, as I said before, under the constitution and by-laws, if the Directors see fit to elect an electrician who is connected with the gas business in any way whatever, they have the right to do it. I am very much opposed to changing the constitution, for I think the smaller we keep it the better. In fact, as it is now, it is very liberal.

The President—Let us hear from Mr. Burrows.

Mr. Burrows—After what has been said, I don't think it is necessary for me to say anything. Although I am engaged in both the gas and electric business, I am very anxious we should not make this proposed change—not that I would object to electrical matter coming in here for discussion at any time—but I wish to keep the society and its organization and support and control entirely as a Gas Association. I do not think there is anything to be gained by making the change. It would be detrimental, and might be very seriously detrimental, to us. I can see ways where it might be used to put us in a minor place. I do not claim to be an electrician myself or anything of that kind—I simply am managing a small electric annex—but I give electrical men the credit of being almost universally technical men, many of whom are of the sort that might and probably would come in and control our Association (not that we have not a plenty and enough of technical gas men), but electricians are of the kind known as "pushers." In fact, they are of the type, so far as gas is concerned, that have no use for gas at all. I don't know what they are to gain by coming in here, except that they would gain control of our Association. I would be very glad to join an electric association, and I have suggested and made some effort in my part of the country, by talking with them, to get the electrical men together with that end in view. Probably in the near future we will organize in our section an electric association; but whether so or not, I think any change in our rules permitting the admission to a greater extent of electrical representatives or representation, would be inadvisable. As the Secretary has just said, we can here treat upon electric subjects. As they are germane to our business, we can consider them, and any gas man connected with an electric department, or any electric man connected with a gas company, can join in our membership. Knowing these things, let us keep our Association just as it is. That has been my view from the time when this was first talked about.

The President—We would be glad to hear from Mr. Cline on this subject.

Mr. Cline—It is a matter to which I have given no thought whatever, but some of the gentlemen seem very conversant with the subject. I can imagine there might be some objection to the amendments proposed, because of the danger of people who are antagonistic to present vested gas interests becoming members of the Association. Now as it is a man can come in here being an electrician, provided he is connected with a gas company, but as the amendment to my mind undoubtedly would admit to membership one who is purely an electrical man, having no connection whatever with a gas plant, it appears to me to be on that score quite objectionable. I have no objection to an electrical man, provided he is a gas man also.

The President—Will Mr. Parker join in this discussion?

Mr. Parker—All I could say would simply be to echo the sentiments I have heard here this morning in relation to maintaining this institution as a Gas Association. It certainly has (as noted by Mr. Burrows) been the means of bringing us all together as gas men, and so enabled us to form acquaintances that would not have been formed if it had not

been for the Association. To adopt the amendment would open the door to men who are purely electricians, who have been our antagonists all the way through, and who have diverted business from us by stating that they intended to annihilate the gas business. I think it would be best to leave well enough alone and remain as we are. As has been stated, there is no objection whatever to any member interested in electric lighting to ventilate his views on that subject; but the latitude and longitude which our constitution and by-laws permit, give full freedom in that respect.

The President—Although I am President, I do not think I am debarred from making some remarks myself. The question to me is, if the name is not proposed to be changed, whether the ground is not cut out from under the feet of those who propose this amendment. I have understood, from everybody almost who has spoken to me about it, that it is a proposed change in the name. If the name is not changed, I really myself can see but very little interest in the matter, unless it be that under the proposed amendment persons who are not connected with any gas interest whatever, but who are purely in the electric light business, would be eligible to membershsp in this Association; and I would ask Mr. Britton if that is the case.

The Secretary—Oh, yes; the effect of the amendment certainly would be to admit all throughout our district who operate electric lighting companies, whether they have a gas business in connection therewith or not. In fact, a bell-hanger who could claim to be an electrician would be eligible for admission to the Association. Of course that would be always subject to the wishes of the Board of Directors; but still to my mind it opens the door to the admission of anybody. Supposing that in any town in the State of California, or in the States connected with our Association, there should be very fierce opposition between gas men and purely electric light men—one of those electric light men would have the right to become a member of this Association and might come in; and that to my mind is the danger of the amendment. The purpose of admitting discussions on electrical matters is fully met, as Mr. Jones has said, by our present constitution. It does not shut out such discussions; and following that thought, I, this year, in inducing members to write papers, secured two upon almost purely electrical matters. Those topics are clearly within the scope of the Association, and I do not see any necessity whatever for changing the constitution as it now stands. I would like to move when the vote is taken that it be taken by roll call. It will serve two purposes, in that it will give a roll call of the members present, and will also put the members present on record as to their views in this matter. (Motion carried.)

The President—As this Association has two fathers (Mr. Crockett and Mr. Jones), who have worked indefatigably for the benefit and advancement of the Association from its origination to the present, the finding that each differs in his views on the case in hand makes it rather difficult for the laymen to form a final opinion. However, I think we can safely go to a vote on the proposed amendments in the manner directed. The Secretary will call the roll.

The Secretary having called the roll, in due time announced that every vote cast had been in opposition to the proposed amendments.

Those who answered the

ROLL CALL

were:

Adams, H. E.	Eichbaum, Chas.	Kaneen, John S.
Adams, Chas. F.	Ewing, E. E.	Kinney, J. D.
Aldrich, W. A.	Fenner, Richard.	Knight, D. E.
Burrows, C. E.	Froelich, C.	Martin, D. E.
Boardman, W. F.	Fogg, L. F.	Miller, C. O. G.
Britton, John A.	Foveaux, F.	Osborne, M. C.
Beck, A. C.	Gregory, O. M.	Poole, C. O.
Crockett, J. B.	Goodman, H. P.	Parker, T. R.
Colquhoun, C. S.	Grant, E. P.	Petch, Thos. D.
Converse, C. M.	Guthrie, Samuel.	Quilty, C. W.
Cardiff, Robt.	Green, J. E.	Rice, A. L.
Clements, John.	Gutsch, A.	Randall, J.
Campbell, A. N.	Grimwood, J. B.	Scott, J. T,
Cressey, Frank A.	Guldlin, O. N.	Steinmann, B. U.
Cheffins, E. F.	Howard, John L.	Thomas, John W.
Cushing, S. B.	Hietzeroth, L. D.	Taylor, G. H.
Cline, W. B.	Hollidge, G. H.	Thompson, George.
Du Val, Wm.	Jones, E. C.	Wilson, G. W.
Davis, W. D.	Jackson, G. W.	Wiedenthal, S. H.
Eichbaum, F. H.	Joslyn, H. S.	

Mr. Crockett—I was the author of that proposed amendment to the constitution, and I still do not think it was a bad one; but as all of the members of the Association seem opposed to it, I do not want to put myself in the position of apparently disagreeing with them in any way. I have the interest of the Association just as much at heart as ever, and as I do not think that at any time anything should come up to interrupt a unanimity feeling in this body, I accordingly voted "No." (Applause.)

The President—It will no doubt be pleasurable to all the members of the Association to know there is no divergence of opinion between our first President and the present members. (Applause.) Next in order is the collection of

EXPERIENCES,

edited by Mr. John Clements, of Red Bluff, Cal.

Mr. Clements read as follows:

At the close of our last annual gathering you saw fit to again place me in charge of the "Department of Experiences," making it my duty to once more endeavor to put before you something that would be of interest and of possible value to you as owners and managers of lighting plants. In view of the fact that the average gas man (who is always modest) does not consider his experiences of any consequence, they standing out before his mind as too slight and too commonplace to be of interest to anyone else, I again find it a difficult task to gather very much data from which to make up a paper that will be of interest to you or in any way a credit to myself.

That many of our members have had experiences during the past year there is no doubt, many of which will be told here during this, the Sixth Annual Session of our Association; and my opinion is that they prefer to give them orally, rather than to reduce them to manuscript.

In many respects the past year has been full of experiences for the gas managers in the small towns of the Coast, especially in the line of opposition. There seems to have sprung up an epidemic of electrical effort to down the gas man, and to destroy his property, or rather his property interests. Go where you may, from Shasta on the north to San Diego on the south, from Carson at the east, or Humboldt on the Pacific shores, you will find these kinds of experiences. Yet they are not wholly without good results, for these trials have suddenly awakened the gas manager, the manufacturers of gas appliances, and the financially interested persons from what might be termed their comfortable ease.

Gas must now be made cheaper and better; and I want to say right here that gas is being made cheaper and better. By the aid of different oil and water gas systems, gas is produced in many instances much cheaper and with greater ease. Then, when it is given to the consumer through the medium of the gas man's best friend, the Welsbach burner, it becomes a thing of beauty and a joy forever.

In this connection I want to relate an experience. It is this: In a recent visit to a small town in California, that has a small gas works managed by one of the most active members of this Association, I was shown a case where 8 Welsbach lamps had displaced 26 sixteen-candle power incandescent electric lamps, the Welsbachs giving much better service and at considerably less cost to the consumer, thus proving that gas can compare and compete, even in the smaller towns, when it is handled by modern methods.

Now, then, let us add to this the other friend of the gas manager and at the same time the friend of the housewife, the beautiful, the clean and comfortable gas stove, and we have a means whereby the output can be increased and the revenues swelled.

This brings me to an experience which I have from another of our members who takes great interest in the affairs of the Association. He says:

We had a "small experience" last month in gas stoves. We placed an order with the dealer for 40 stoves of sundry and various kinds and sizes; in the lot were a dozen 1-burner hot plates. As soon as they arrived we advertised that fact, stating at the same time that the 12 small stoves would be given away, absolutely free of any cost, making no distinction, "First come, first served." This offer was to hold good for one week, and as the small boy says, "You ought to saw 'em."

Our office opens at 7 o'clock, A.M. The first morning after the announcement we found three persons waiting for the gift gas stoves; by 9 o'clock the same morning they were all gone. The net result was: Some were turned away, feeling hurt; others did not believe that the Company meant to do such a thing; a few went us one better and bought stoves. One smart lady, who got in early and secured a gift stove, would not let us wrap it up, but held it in her hands and asked, "What are these stoves worth?" We said to her, "Nothing; they are free." "But," she said, "this stove is too small for me; I want to sell it to the Company and purchase a larger one." Appreciating the joke, we allowed her the cost price of the gift stove, and she purchased one many times more valuable. We offered to deliver the gift stoves for the fortunate ones. Not one of them, however, would allow us to

do it, but took them in their hands, showing them to friends and neighbors on the way, who wanted to know all the whys and wherefores. This was the best advertisement in which the Company ever invested. All of these stoves are now consuming gas, and they have been the means of selling others. The women are all talking gas stoves and gas cooking on any and all occasions. At this time, a little over a month after receiving the invoice of 40 stoves, we have just 6 on hand. It looks as if we would do a fine business in gas stoves this summer, notwithstanding the fact that this is a great timber country, and wood for fuel is very cheap indeed.

Another correspondent says he has been enabled, by the introduction of improved methods of making gas, to lower the price of gas to his consumers, and at the same time introduce gas stoves, in many cases not only displacing wood as fuel, but gasoline and coal oil as well.

He says we sell the stoves at actual cost, giving the purchaser a good, long time to pay for it, guaranteeing on our part satisfaction or no sale. We have as yet, after a year's experience, the first stove to take out after it was once installed. We have placed several stoves in houses that are along the lines of mains, but yet have never been piped for lighting purposes, owing to the fact that the price of gas under the old method of manufacture was too expensive.

So now, when we install a stove, we take care to arrange for a light in the same room, putting in a Welsbach and showing the lady of the house its many advantages, which she soon appreciates, especially when, after having been at work preparing a meal by this unsurpassed light, she sits at the dining table on which is placed a coal oil lamp. What is the result? The man of the house is shown the difference, which he at once sees. The next thing we hear is that he wants lights in the dining room; and, "while you are at it, put in pipe for the other parts of the house." So you see by the introduction of improved methods of manufacture, which enable you to sell gas at a reasonable figure, placing it within reach of the poor as well as the rich, you increase your sale and in the end the Company will profit by it.

Another correspondent reports an experience which will be found very valuable to gas companies that handle large quantities of coal, and that may be short of shed or bunker room. He writes:

"During the latter part of 1897 it became necessary, on account of the arrival of several English ships, to provide for the storage of something over 7,000 tons of Welsh anthracite coal. This coal was stored out-of-doors, subject to the action of wind and weather, as our North Beach Station was not yet provided with coal sheds.

"In storing coal in this manner it is customary, where it is hauled in carts from the wharf, to build a pile after the fashion of the Tower of Babel; that is, starting on the ground with a small, wooden bridge and building the coal up spirally, laying a plank road for the carts as the work proceeds. Finding ourselves entirely out of planks for this purpose, at this juncture several ideas occurred to the writer: First, it would be expensive to purchase lumber for the roadway, which was undesirable; second, the action of the winter's rains on this immense pile of coal would tend to wet it through; but although there was no danger of spontaneous ignition, the action of the air and water would tend to disintegrate the outer coating of the coal and thus reduce its value; third, we had on hand a heavy weight of anthracite screenings from previous cargoes, as well as a quantity of oil tar from our water gas works.

"These three conditions suggested to the writer's mind the possibility of getting along without planks, and placing this pile of coal under a waterproof roof as good as any coal shed.

"To diverge from the subject, it is well known that in foreign countries coal screenings are mixed with any form of bituminous matter, such as pitch or tar, and compressed into briquettes, which fuel is used for locomotive firing on some of the largest railroads in England and on the Continent.

"This knowledge suggested that the continual teaming of coal over a thick coating of coal screenings mixed with boiled oil tar, would compress it and produce the same results; that is, a solid boiler fuel.

"Returning to the subject. We mixed our anthracite screenings with boiled oil-tar, starting our coal pile in the usual manner; and, as we proceeded, covered the roadway with a coating of the mixture from 4 to 6 inches thick, and as the carts rolled over it the mass became compressed and made a good roadway.

"When the coal pile was finished we closed up the gaps which had not been hauled over with the same kind of a coating and rolled it with our ordinary road roller. This left a symmetrical pile of anthracite coal, snugly covered with a waterproof coating of screenings of its own kind, mixed with a pitch which came from the oil which we use for making gas, and we found the roof would shed water and effectually keep the air from the top of the pile of coal. It also prevented considerable loss through dust blowing away during our brisk, west winds. When we began to use this coal we used from the face of the pile, and as we advanced into it portions of this roof would tumble down in sheets. This was broken up into sizes to suit, put into cars and hauled to the boiler room to be used for boiler fuel, which purpose it answered admirably.

"It will be apparent to the Pacific Coast gas man, who is obliged to store quantities of coal out-of-doors, that, by the above experience, several purposes were accomplished.

"For covering anthracite coal piles it is well to use anthracite screenings; and for bituminous coal piles, coke screenings.—E. C. Jones."

Another correspondent details an experience that is of great interest to all gas men on the Pacific Coast, which relates to the procurement of coal from other than Welsh sources. At the present time while our country is engaged in a war, each and every naval engagement of which sinks a load of Spanish coal and a Spanish war vessel along with it, this recital is quite important. The detail of this particular experience is:

"The strike in Wales, coupled with the war scare, produced a shortness of anthracite coal and dismay among the gas men. Fearing, like many others, that it would be a case of substitution in water gas plants of gas house coke for anthracite, I set about trying to find a substitute for the Welsh coal; one that would serve should the price advance, or the use of coke in our present form of apparatus prove a failure. Through a member of our Association I learned of an anthracite mined in New Mexico and was informed by him that unlimited quantities of it could be delivered here. The price at first seemed prohibitive, the cost at the mine being $3.25 per ton of 2,000 pounds, and the freight $7.50 per ton, thus making a rate of $11 per short ton, delivered in Oakland. I purchased 40 tons for trial and by its use demonstrated the following:

"That there is no slack whatever from the coal, every pound delivered at the works being available for generator fuel. It is a coal resembling in its appearance, hardness and fracture, the Pennsylvania anthracites. It does not clinker to any greater extent than the Welsh coal, but upon a very high blast heat it gives off a residual which, when hot, is of a pitchy nature, but which, when cold, is of a vitreous nature, so that when struck with a bar it breaks as if made of glass. It required an average of 41 pounds to each 1,000 feet of gas made, and did not increase our usual requirements of oil per thousand. While the price of $11 per ton, compared with the prevailing rates of anthracite, is prohibitive, even allowing for a loss of 30 per cent. in the anthracite available for generator fuel, it still demonstrates that we have a place of safety in the event of our losing the control of the Welsh market, through high price, strikes or otherwise."

The gas manager no sooner conquers one enemy than one (or a dozen) more rises up to confront him. For instance, he consolidates with the existing electric light company, then he knocks out the automatic gas machines, only to be confronted by a man who, having heard of the fearful explosions of liquefied acetylene, wants to know if there is "Any of that d—'d stuff in his gas." A woman calls him up by telephone and says her gas stove has something the matter with it, because it "pops" every time she lights it, and that when it does this she can't get any heat from it. He rushes off and regulates the air at the burners, and the indignant air of the lady of the house as well where the gas store has been installed. Having done all these things, lighting time and night are upon him. When at last he is ready to go to his house, a friend meets him, who says: "Say, Gas; have you seen that new coal oil light up town in the hotel that knocks the (Cabasia) —excuse my fluent use of Spanish at this juncture; but I can't help it, as our ships are full of Spanish soldiers returning to Spain—"very head off the electric arc light?" And "Gas" says "No; just show me something of that kind. That's what I am after." His friends final is: "Well, they have got it all right, old fellow."

And so they have. It is dignified by the name of the Father of our Country. They call it the "Washington light." Great things have been claimed for this light; but when "Gas" reached San Francisco, he called upon "A Prominent Member" and told him what a powerful thing this was. "Well," Brother Prom. Mem. said, "don't place too much store by this thing; I have an 'experience,' which Clements will read at our next meeting, that may change your mind about the immense candle power, the great cheapness and the 'utter safety' of the Washington light." So, my friends, I will now read to you this experience, which is contributed by Mr. E. C. Jones, of San Francisco, and which may be introduced under the title of

"*A Uniform Photometer Test.*—Some weeks ago there appeared in San Francisco a new light, using coal oil as fuel, and known as the

Washington light. The operation of this light is novel, and the light itself intense. The principle of its working is the forcing of coal oil from a pressure tank situated at a convenient place, through very small copper tubes to a burner, consisting of a cluster of three incandescent mantles, similar to the Welsbach. Above the mantles is a vaporizing chamber, heated by the uprising heat from the lighted burners. In order to light this burner, it is necessary to heat the vaporizing chamber by some outside source (such as an alcohol lamp). This starts the vaporizing of the oil and permits of the lighting of this vapor mixed with air at the burner. The first circulars describing this lamp gave the illuminating value at 1,500 candles. This gradually came down to a claim of 1,000 candles. In order to prove or disprove these claims, Mr. F. E. Smith, the chief electrician of our Company, assisted me in making a candle power test. We selected a place where one of the lights was suspended at the end of a store, and at the other end a gas drop. From this gas drop we suspended a cluster of three Welsbach lights, to the exact level of the Washington light. From the center of each light we dropped a small brass plumb bob, and from point to point of these plumb bobs was stretched a steel tape, drawn taut. We then constructed a Bunsen screen, about 15 inches square, with a transparent center, 3 inches in diameter. This screen was arranged on the end of a pole, and from it was suspended another plumb bob, the point of which came in contact with the steel tape at the bottom. This experiment was conducted in a room free from any extraneous light, and readings were made by both of us in order to annul personal error. The three Welsbach burners consumed 11.01 cubic feet of gas per hour, giving a candle power, deduced from 20 readings on the photometer bar, of 175.032 candles. These Welsbachs were standardized by an incandescent electric lamp of 16-candle power, at 113.3 volts. The result of the photometric test showed the candle power of the Washington light, deduced from 20 readings, taken in comparison with the Welsbach standard, to be 396.49 candles. The pressure of the oil fed to the Washington light was 57 pounds, at the reservoir. The distance between the center of the lights, when the readings were taken, was 127¼ inches."

And now, my fellow members, I am satisfied that many more experiences could have been given by you if you had found the time and inclination to do so; but, as I have said in my introductory remarks, you have not thought your experiences of sufficient importance to reduce them to writing, all of which must certainly be due to your native modesty and retiring dispositions. Again I wish to say, or repeat what I said last year, that I believe we can get more in the line of experiences from the members while they are on the floor of the Association hall than at any other time; and, therefore, I am inclined to the opinion that this department is not of much consequence. I thank you for your kind and patient attention, and hope that some small grain of profit may come to my fellow members through my humble efforts.

Discussion.

The President—I wish to say that heretofore the "Wrinkles and "Experiences" have been little, if any, discussed, as some things might be brought out through this source that would be of value to the Association. I suggest the opportunity to discuss them, if anyone is so disposed.

The Secretary—I think the matter in the "Experiences" which is probably of most interest to the Association is the recital respecting the Washington lamp. Mr. Crockett, who is showing us the copper tubes used for the transmission of the oil vapor, can tell us a great deal about the "Washington light," and I hope he will enlighten us on it.

Mr. Crockett—My experience with the Washington light has been very slight. It was brought here by a man from Boston whom I knew quite well, and he made very many promises about giving us an opportunity to investigate it in every possible way, but the promises were never kept. He never permitted us to examine the light any more than he permits anybody else to go in and look at it. I don't think he cared to have us investigate it to any extent, but our experience with it, from what little we have seen of it, is that it is a light which can never interfere with our business in any way. In the first place, the oil vapor is generated in German silver tubes. They have a little cup under the burner and a man has to get up on a stepladder and squirt alcohol into this little cup and light it. The operation of lighting takes anywhere from five to ten minutes. When that is lighted it burns up and heats the tube. Then the oil is forced through those little copper tubes under very heavy pressure and draws air in at the same time, and mixes it at the point of combustion. They use an imitation of the Welsbach burner. The pressure was very strong and the heat very intense, and a burner put on in the evening would the next day be nearly gone. Second, it took too long. Third, it created a very great heat. They claim a candle power of 1,500, but as you saw by the experiment detailed in the experience, it was less than 400. Furthermore, it was put in a drug store across the way, the proprietor of which said that, after it was put out at night, the smell of the coal oil from that immense lamp was so disagreeable that he could not sleep unless he had the doors and windows all open; and, so far as he was concerned, while they were giving him his oil free—in fact, he was not paying anything at all for either lamp or oil—he might stand the operation of the lamp and its results for some time; but if he had to pay for it he would not stand it a minute. That is as far as I have gone with the Washington light, and I think I have gone far enough to know that it is not going to hurt us at all. Mr. Jones has also had some experience with it.

Mr. Jones—Mr. Crockett has covered every point in connection with this light. At one time I thought the introduction of this light into the smaller towns might seem a menace to the business of some of our members, for which reason I tested its candle power in order to assure them that the latter was neither 1,500 nor 1,000. I am of the opinion that the small copper tubes through which they force the coal oil cannot be made absolutely tight, and I have grave doubts whether an insurance company would care to insure premises piped with these tubes containing kerosene oil under a pressure of from 40 to 57 pounds.

The President—Having made some investigation of the Washington light, my conclusion was like that reached by Mr. Crockett; that it would not interfere with the gas business in any way whatever. It might possibly be very useful for isolated concert halls, bathing places, etc., in outside districts of towns not reached by gas mains, etc. I am positive that very serious results would follow from its use, both from the leakage out of the copper pipe and also from the use of the alcohol heating up the burner. Moreover, I can state that in 1868 a similar system was tried on a fairly large scale on tugboats in and around New York harbor, and although it was heralded by the newspaper articles as a very useful if not a great thing, it went out of use in a very short time, and has not been heard of much since in the East since 1872. The advent of the Welsbach mantle seems to have afforded the opportunity of resuscitating the scheme. However, I do not think it will cut any figure at all in connection with the lighting of places where gas companies are located.

Mr. Hollidge—Considering the small size of that copper tube, do you think it would last over six months without getting clogged? Again, if it did get clogged how could they clear it?

Mr. President—That is another objection to it. Of course it would choke up some time or other, especially near the burner.

Mr. Britton—Probably some of the members will recall to mind a device, much on the same principle of the Washington light, that was introduced some six or seven years ago quite extensively on our side of the bay, and also I think in San Francisco. It was practically a gravity system of feeding oil from reservoirs to lamps. At the time it threatened, in the minds of opponents of the gas companies and in the minds of some gas superintendents as well, our annihilation. But it went the way all those things have gone. A Chicago man was very active some time ago with a little machine which he exhibited on Kearny street. He passed city gas or air through a carbureter, obtaining a candle power of wonderful intensity with a mimimum quantity of enrichment, and with a reduction of the quantity of city gas used. Mr. Jones and myself investigated that thoroughly. I had the machine at one of my stations in Oakland for two weeks, and gave all the time needed to demonstrate what could be done. The trial resulted in failure; and so it goes. From time to time those bugbears frighten the operators of small gas works throughout the country, and it must be a great satisfaction to them when they come to a meeting of this kind to be told by Mr. Jones and other like authorities that they need not fear them. It makes sleep more pleasant, thus rendering the life of the gas man a little less hard, which fact alone makes it worth his while to have membership in such an Association as this.

On motion, a vote of thanks was passed to Mr. Clements for his recital of "Experiences." On motion, the Association took a recess until 2:15 P.M.

FIRST DAY.—AFTERNOON SESSION.

The afternoon session was called to order pursuant to adjournment. The President introduced Mr. A. Gutsch, Superintendent of the Fresno (Cal.) Gas and Electric Light Company, who read the following paper on the subject of

GAS IN COMPETITION WITH ELECTRICITY BY WATER POWER.

The field of lighting, heating and motor power, in former years occupied almost exclusively by the gas industry, has long since been invad-

ed by the giant, electricity, and although the claim of victory must be conceded to gas wherever heat for cooking or other domestic uses is wanted, the trolley car, the electric hoist and storage battery have also come to stay, and these territories stand in dispute no longer.

In competing, however, for the supply of light and motive power the war is on wherever gas and electricity are both at hand, and the ultimate victory will be for the one which can be furnished best and cheapest.

It is only a few years since the first large electrical transmission plant was established on our Coast, and great things were expected from the cheapness with which power and light could be furnished thereby, according to the theory of the promoters. It seemed, indeed, as if the gas industry would be paralyzed in the districts benefited by the advent of the cheap electric light and power, and not only did the general public begin to frown with safety on the gas bill collector, but our own colleagues were commencing to sympathize with the attacked or threatened brother, wondering how he would ever pull out, and who would come next.

But, strange to say, not one of the plants thus attacked on our Coast has left the field. Although more or less battered, each one is still in the ring; and, "you ought to see the other fellow."

In Fresno, the San Joaquin Electric Company commenced operating in May, 1896. The Gas Company, organized in 1883, had ever since 1886 operated an electric lighting system by steam power. In that shape it had successfully withstood the onslaughts of the various new idea gas promoters, as well as that of a local merchants' electric lighting opposition, absorbing the latter and materially strengthening thereby its hold on the consumers; but when it became a certainty that the Chicago Municipal Investment Company, whose grip on the Fresno Water Company has just been severely threatened by that scarecrow "Municipal Ownership," stood ready to supply an abundance of light and power to the prosperous valley at prices lower than anywhere else in the United States, the Fresno Gas Company made ready to fight for its very existence.

Our fighting apparatus was put in order as quickly and as well as our means would permit. Beginning with the gas works, which needed much looking after, it being pieced together out of an old Lowe apparatus and a small coal gas works, we commenced the gradual extension of our mains into all the formerly neglected districts, the installment of new services and meters, the selling, loaning or giving away of nearly 1,500 Welsbach lights, and a system of fixed gas rates, which soon told on the opposition's forward march. Besides, as an auxiliary, a loan and rent system of gas stoves was instituted, which has resulted in the spontaneous use of nearly 400 gas ranges, and in possession of ground which is simply unassailable by the enemy.

Still, even now, gas sold for fuel in Fresno forms less than 40 per cent. of the total gas sales, and, if any anything, the proportion of gas sold for lighting is on the increase.

Yet, the contracts offered by the new Power Company were aimed to paralyze our $2 gas rates and our electric meter rates of 15 to 30 cents per kilowatt. Their lowest monthly rate for residence lighting was 10 cents per 16-candle power for 24 hours, the highest was 35 cents. In business places a sliding scale was adopted ranging from 30 cents as the lowest to 75 cents as the highest; that is, a 16 candle power light would cost from 1 to 2½ cents for each 24 hours. And arc lights came down to $1.75 per month for 2,000 candle power!

As soon as our lively little town was sure to be benefited by such liberal charges, predictions of a glorious future became intense, and the enterprising business men made haste to get their share. The old electric steam plant, of course, was doomed, they said, and so it was.

The new rates for electric lighting had hardly been in operation six months, when, on the 1st of January, 1897, our electric plant shut down. It was a good thing. It stopped a great financial leak. With gas alone since then we have succeeded so far that at certain periods we are now selling more gas than we ever did before in the history of the Gas Company. Several factors were instrumental in this.

In the first place, soon after the shutting down of our electric plant, popular sympathy, as is usual, began to run in favor of what appeared the under dog. People began to realize that opposition was a good thing and ought to be kept up.

What, in case of an eventual monopoly, the local owners of the Gas Company would do, was known and well appreciated. About the Chicago owners of the new electric plant some doubted existed although their policy had always seemed quite plain when applied to the Fresno Water Company's bills.

Some men had actually declared that they would keep their gas light, even if electricity could be had free in Fresno.

Secondly, the instalment of electric lights cost money. The former system of wiring was declared inadmissible, and for less than $2 per light, in more than one story buildings, the new electric wires could not be strung.

On the other hand, the Welsbach Company had deemed it wise to place the price of their lamps at $2.50, and gas was handicapped; still they gave a light of 60, down to 30 candle power. But to offset that, the Electric Company was quite generally introducing lamps of 32-candle power.

Next came the popular prejudice against gas meters, which in many cases we removed by selling gas at fixed rates. The prepayment meter was not generally known then, or else the Gas Company would not have had to stoop to this perhaps unfair discrimination, which now, of course, we boast has been entirely done away with.

As a fourth factor, the trouble of renewing, and the fragility of the Welsbach mantle were offset by the frequent and expensive renewals of electric lamps, since the voltage given them at first, for certain reasons, was so unsteady that the incandescent lamp proved frailer than the Welsbach mantle. Besides, "Lighthouse" and mica chimneys to the number of 1,000 were placed whenever the brilliancy of the light was of less import than its lasting quality.

Fifth, the easy convenience of lighting a dark place by simply pressing an electric switch button, found an offset to some extent in the general introduction of by-pass valves, as the cost of electric gas lighters and spark coils unfortunately was too high for general use with us.

But extraordinary allies have since come to our rescue, as we have found, upon comparing notes with our opponents, and finally they have been forced to raise their rates on that account.

Firstly—The S. J. Electric Company had built a most substantial plant, a credit to the devisers and builders and a pride to Fresno's inhabitants. It cost some money too, above $300,000 I think, and this great capital invested demands interest.

Secondly—There are 7 miles of ditch to maintain a reservoir for 3,000,000 gallons, 4,000 feet of steel pipe conveying the water down 1,400 feet to the three Pelton wheels in the power house, each representing 450-horse power; 35 miles of pole line, a sub-station in Fresno with numerous circuits of high and low tension, pole transformers, municipal lights on a 16-mile circuit, motors, meters and other contrivances demand the constant attention of 20 employees, and that costs money.

Thirdly—With the greatest and best of care, each part of this system has been subject to costly breaks and repairs.

Fourthly—The bugbear of "the peak of the load" has asserted itself, and more often than welcome. Power has been lacking to bring all the lights up to candle power. Just as other power plants have had to spend unlooked for amounts to supplement the waning waters of their streams by establishing steam plants, economizing water and relocating their turbine wheels, the Fresno Electric Company has entirely stopped pushing sales of more current, since it might otherwise still raise the dreaded peak of the load, and it was concluded, that by raising the voltage from 11,800 to 19,000, a saving might be made in the loss by transmission, and *that* cost more money.

Fifthly—Not able to raise such contract rates as that of $6.45 each, for 80 all-night street lights; all the short hour consumers' rates for arc light have been raised to beyond that figure. The rates for incandescent lighting have also lately been brought up to 25 cents per month as a minimum for any residence lights, and 50 cents for a downtown light. The current used for power is not sold for less than 5 cents per kilowatt by meter against the former monthly charge or guess of $3.50 to $5 per horse power. And nowadays the implication to the power user goes along not to use his current when the hour of the peak of the load has come. This necessity of changing has lost the Electric Company the friendship and popularity of its patrons to a large degree.

I contend that at 5 cents per kilowatt for limited electric power, no power user in Fresno (and we have no less than a dozen packing houses and a dozen machine shops, planing and rolling mills, factories and other power users) can ignore the cheapness and reliability of gas power as dispensed by a modern gas engine, furnishing the same power for less than 3 cents per horse power hour.

Further, with prices not aimlessly low or regulated by patent sliding scales instead of by meter, I claim that the patent gas lamp is the superior to the electric indoor light in price, and that with the introduction of the "unbreakable" mantle, as patented last year by Fritz of Berlin, Germany, and with the efficiency of the mantle increased by nearly 60 per cent. through the vertical adduction of air to the outer side of the mantle, according to Dr. Schott of Jena, in both power and lighting, gas can fully hold its own against cheap electricity.

While I would concede certain forms of decorative and street light-

ing, as well as the use of very small power units to electricity, undisputing likewise street car service and mining machinery, I believe that the large investment necessary for small water power electric plants and the expense of a large working force, the uncertainty of supply, cost of repairs and danger and intricacy of operation, together with the rapid decline of the machinery's value, compel prices from consumers with which any modern gas plant can very well compete.

Discussion.

The President—Gentlemen, you have heard a very well arranged statement of facts in the paper submitted by Mr. Gutsch. Will Mr. Cardiff give us something from his experience on the points mentioned.

Mr. Cardiff—I am from Santa Cruz, where we have a water power electric plant. The Big Creek Power Company, from which we buy our power, transmits the power about 18 miles. We buy our power and light the town with electric light, and also have gas lighting. I find that gas is replacing all the electric incandescent lighting in the stores. In fact, there is no incandescent electric lighting done at all there. Stores formerly lighted by electric lights that yielded us $20 per month are now lighted by gas burned in Welsbach lamps, and our receipts therefrom amount to only $7 per month. The transmission of electric current generated by water power at a distance of 18 miles from the point where the current is used is a costly operation; in fact, it is so costly that gas is bound to beat it every time. It is impossible for them to run a year without having the lights go out several times, which extinguishment is very annoying to consumers. This was one reason why so many of our consumers took out the electric lights. They would not keep on with a lighting medium that was unreliable as to duration.

Mr. Aldrich—I don't know that my experience will tend to enlighten you much upon the question of gas vs. electricity in Spokane, where we have a normal 30,000-horse water power. You can also have arc lights at any price you choose to pay for them. The present municipal condition of Spokane is such that it is supplied with 200 of the 2,0v0 so-called candle power arcs, all night and every night, for the price of $4 each per month. The lowest price charged for incandescents is from 25 cents to 35 cents for 16-candle power lamps, and although we are confronted with these conditions, and the element of business is entirely eliminated from the transactions of the electric light company, still the old Spokane Gas Company contrives to exist for the benefit of its stockholders and employees. Of course I am willing to admit that I am an earnest disciple of the Welsbach light (not of the Welsbach people), and wherever I see an electric light man I smite him hip and thigh—I cannot imagine for the life of me how it is that there can be any affinity between the electric light man and the gas man. It is my experience that the electric light man has all to gain from these meetings, and nothing to lose. I know very little of electricity, voltage, amperes, etc. I want to know little about it. Gas is good enough for me, and during the four years that I have had control of the Spokane Gas Company it has been my privilege to help somewhat to raise that Company to a state of high financial success. I cannot imagine a gas man committing an act so suicidal as to touch anything savoring of electricity, although that I am somewhat radical in some of my ideas I am willing to confess. I came into this splendid building, have passed it two or three times, looked up to its beautiful architecture with awe, and thought how splendid it must be to control such an institution as this. I look into its portals and I see the electric light dressed up in "its Sunday clothes." I look at the poor gas burner, and see a sample of the 5 or 6-foot flat flame type. I do not think that should be. I think that the gas companies, even if they indulge in the luxury of running an electric light company, should dress up each gas light to its best advantage, and I am in hopes that in due time gas men who are unfortunately identified with electric light interests will be converted until such times as the gas, beautified by the beautiful Welsbach invention which we enjoy to-day, shall be elevated from the ashes from which it sprang, and in due time shall take the place it long has held, and retain that place to the end, triumphant over all the artificial lights of the day. (Applause.)

The President—This statement by Mr. Aldrich surprises me. In a city where water power is right in their very midst the gas company is not only able to subsist but to do well. It is the best showing I have ever heard of as to gas vs. electricity.

Mr. Aldrich—I might add with your permission that I want every gas man to take courage. I have forgotten to mention the water power. We don't have to bring it 18 miles, as another speaker said during this discussion. It is right in the heart of the city, and there is no other place in the State that enjoys better facilities for delivering cheap electric lights. This year I have already laid 4½ miles of main in a new residential portion of Spokane, which, by the way, promises to be the empire city if the boomers would only let us alone; but the electric light company is afraid even to string its poles in that direction. We have only 1,300 consumers at present. We increased our output in the last three years by exactly 35 per cent. each year. Of the 1,300 consumers, 627 are using gas ranges. We do not have to give them away either, even at that. I don't believe in giving away gas stoves. The man to whom you give a gas stove usually makes up his mind that you will make him suffer for it afterwards.

Mr. Clements—I desire to say a few words in connection with Spokane. The President of the Spokane Light and Power Company (Mr. Sherwood) is a stockholder in the Company that I represent. He thinks a great deal of their water power, and of their investment, etc. Our President (Mr. Runyon) is absent in Europe, and during his absence we have appearing before us like a ghost an opposition electric lighting company. The other gentlemen who were members of the Board of Directors telegraphed to Mr. Sherwood to come to Red Bluff, which he did. After looking over the ground and returning home, he advised me by telegraph to proceed at once over the State, inquire into the small plants that are making gas by modern methods, and to fight an electric company with gas, acknowledging what our brother here has said.

The President—Will Mr. Rice say something on this subject?

Mr. Rice—The situation in our town (Riverside, Cal.) is somewhat mixed. We come in competition there with a municipal plant, which, of course, has to have more regard for legitimate commercial methods of doing business than it has had. They have had in the last year, as closely as I can estimate, a loss of about $8,000 in commercial business; but nevertheless, considering our circumstances, we are still increasing remarkably well. I think our Company made the largest increase in output in its history the last year, and I have no fear of even municipal electric lights. Their power is transmitted something like 27 miles I think, and if we can continue to improve as well as we have during the last year, I can imagine that, when they do come to their senses, and bring their miserable electric business to a commercial basis, that we will have nothing whatever to fear. I believe that any gas company in a good, warm town can get out gas stoves enough to pay its operating expenses and fixed charges, and put itself in a position to bring a municipal plant or any water power plant to a point where such will be willing to either compromise or share in the glory of a fight. I believe a gas company can whip any electric light company or municipal light company that ever lived. Those are my sentiments.

The Secretary—I see that neither Mr. Jackson nor Mr. Steinmann, of Sacramento, is present. They could add to the interesting tales that have been told. That Sacramento, long-distance power transmission is undergoing a transformation such as the Christmas spectacles at our theaters could not compete with, in that its owners are putting in a very large steam plant, with Babcock & Wilcox boilers and large Corliss engine, to supply the people of Sacramento with long distance power transmission from Folsom by water, converted into steam. (Applause and laughter.) Of course it does not stand to reason that they are all going to be unsuccessful. Some company may be able to make its business profitable; but we have been meeting now for years (this is the sixth annual session of this Association) and that specter of long distance power transmission has come up before us at every meeting, only to be promptly knocked down with a club in the hands of the gas man. It does not die at all. It is a hard thing to kill, but I think we are giving it some pretty good drubbings all the time. We can all take hope from what Mr. Aldrich says, that the chances of being knocked out of our positions or losing our business are too remote to be considered just now.

The discussion was declared closed, and the President introduced Mr. O. M. Gregory, of the San Jose (Cal.) Light and Power Company, who read the following paper, entitled

LUBRICATION IN THE GAS BUSINESS.

It is certainly extremely odd to talk about lubricating as stationary a piece of machinery as the hydraulic main; but ours is made in sections of wrought iron, having a large cylindrical pocket, a couple of feet deep, extending downward from the bottom, to receive the heavy tar, and two sealed channels, made in the top of each section, so that the tar can be scraped from the bottom into the cylindrical pockets by putting the scraper down through the water that seals the cleaning channels. The water in these channels being ammonia water, will emit fumes that forthwith begin to corrode the top of the main around these openings. Let me stop right here to confess that the top of the main

was allowed to remain covered with dust, just as we all do I presume with cast iron hydraulic mains. It was discovered, however, that this was not that kind of a main. Slowly but continually the corrosion went on unseen, until in one place a little gas showed itself through the dust. Then the dust was all swept away in a rush and a high court of investigation was held—not on the bench, but above all the benches; and, after viewing the rough condition of the iron around all the openings, the opinion was handed down that at least that kind of a hydraulic main cannot be run smoothly without lubrication.

The lubricant is petroleum oil put on with a brush over the parts that are liable to corrode, allowing a small quantity of the oil to fall on the troublesome waters, thus mixing the fumes of the evaporating petroleum with the fumes of ammonia water and effectually preventing corrosion. Passing on to the engine room: Should you be in doubt as to the best lubricant for the steam engine that runs the exhauster, ask the ever present, energetic, constantly returning, highly animated, never dying, oil man. His lubricant language will soon convince you that he has the best, and, as the engine runs light and easy as an old shoe, owing to the little work it has to do, any reasonably good cylinder oil will give perfect satisfaction. Electric light men will notice that we are not so particular on that point as they are compelled to be.

Of course it is superfluous to say that the only economical way of getting oil into a steam cylinder is through a sight-feed lubricator, and perhaps a drop a minute will be found quite sufficient oil for engines doing light work. I had intended to leave the exhauster till the last, and then run it up to 1½-inch vacuum and completely exhaust the subject, but I became alarmed at the thought of drawing in more wind. My test light is getting a little dim already, and if the gas I am giving you gets much bluer, I am sure there will be a general stampede of calls to the carpet. It will be no local complaint of some gentleman's fixture out of order. Then, too, the exhauster is generally placed right here, in the line of my trip through the works, between the hydraulic main and the condenser, where it pumps light tar as well as gas. The wonder is why the inside of it is not sufficiently lubricated by that light tar, a fresh supply of which is continually going through it. Notwithstanding this it seems to be a fact that, though we use but little oil, when it fails to run for some cause, the exhauster makes a rubbing noise on the inside as if in need of lubrication.

An old friend of mine once intimated that if I were looking for trouble perfect satisfaction could be had in that line by lubricating the exhauster with coal oil for a considerable length of time, but being sufficiently supplied with this world's anxieties at the time I took his word for it and never tried it. The statement came incidentally, when I was busy, and was not thought of again until my friend was gone; then came the pondering on the positive knowledge, gained by experience, that, where gasoline is allowed to flow into the main where the gas is warm for the purpose of enrichment, a heavy residue will be deposited to such extent that it is necessary to have a hand-plate near by to clean it out, in the course of a few months' use. Coal oil admitted into the exhauster, where the gas is warm, may also evaporate to some extent, and act in the tar like a drier in paint, if, indeed it does not act like the gasoline surely would and clog the exhauster up with a heavy, gummy precipitate. The conclusion is that not a cutting, cleaning oil is needed for the exhauster, but a greasy oil that will not evaporate. Lard oil has given satisfaction with us for a number of years. The writer knows no better than to think it is the best for machinery that is moving in the gas.

At one time I thought crude petroleum was the proper and only oil needed in the purifying department. We used it in painting the whole surface of the inside of the purifier covers, and kept the sides of the outside covered with it to prevent corrosion at the water line. We also used it exclusively in lubricating the center seal. Now we use it on the covers as before, but not on the center seal. We use lard oil on the center seal, for the same reason in a degree that we use it on the exhauster; the volatility of the petroleum oil making it more of a drier than a lubricant. Of course you cannot do any particular harm by using it on the center seal, though by practical test you may become satisfied that lard oil is the proper lubricant in that place.

All kinds of greases are lubricants in their places. The cheapest kind of skid grease is as good for the slides of the coal elevator as the most costly oil in the market; but it takes real, genuine "elbow grease" to properly lubricate a gate valve. The ground faces of the valves cannot so well be reached with anything else. They seem to keep in fair order by being opened and closed once in three months; but a better plan would be to have them opened and closed once a month. For instance, if one selects the first Monday in the month for that work there is more regulation about it than if he says they should be opened and closed once in a while and then finds they have not been moved for six months and wonders how the time slipped by before the "elbow grease" was used on the valves.

I do not know whether the import of that word "lubrication" can be stretched much further without tearing or not. It may be when I get to lubricating I am like the "new oiler." He sees no oil on the piston rod and pours a lot on. The rod goes back through the packing and pushes it all off, then he pours on a lot more, and that goes on its way to the sewer as did the first lot, and so on. He oils everything in sight—the floor, the walls, and his clothing, to which he gives an extra dose. Perhaps the members will pardon me if I extend the meaning of the word "lubrication" so that I can lubricate the whole business, consumers and all, without running off the subject.

Much has been written about the use of soft, smooth and oily language at the complaint desk, that has been brought out by the varied dispositions of the customers who make the complaints. Mr. S. Milo Dole grows eloquent in the AMERICAN GAS LIGHT JOURNAL[1] when he says: "Their needs are as the plants for multitude; their wants as the sands upon the seashore; their demands as the stars of the milky way for number, and frequently as difficult to perform as to scale the height from earth to heaven while cumbered with these bodily tenements of clay." True, the complaint clerk must be ever ready with his side flask of soothing oil to pour on the troubled waters that seal the gas and allow none to escape without being paid for, and calm the storm on the face of the customer that is just approaching. Just here we might lubricate the business with a little "elbow grease." The complaint clerk cannot get away to do that, but the man on the outside can. When we are asking about the welfare of the wife and little ones, just include the gas stove, and if it is not doing well, do not suggest a remedy—talk is too cheap—"elbow grease" is more valuable. Go right at it and make it do well.

I met a customer on the street one day who runs a white labor laundry, and in the course of conversation drew out the fact that his ironing machine smelled so, and the gas from it hurt the operator's eyes so, that they quit the work one after the other till he was tired of getting new men, and thought of throwing the machine out. Of course a vision of imperfect combustion passed before me, but I preferred to ask him what he thought was the matter. He said he had handled the machine in every imaginable way, and finally went to somebody in San Francisco, I presume an expert, where he was told it was the miserably bad gas they make in San Jose. I said, "Don't tell that to everybody else in the meantime, and I will bring one of our best men in that line, and we will give that machine a little 'elbow grease' early in the morning." We were not operating the machine long till we discovered that a large quantity of gas and a correspondingly small quantity of air blown into a horizontal, hollow cylinder would create, when ignited, a condition that would shut off the circulation of the surrounding air through the cylinder. The result was that the heat and products of imperfect combustion rose up out of both ends of the cylinder, making an intolerable atmosphere to live in and a costly machine to run. In this case we simply shut off a portion of the gas and let the air blower supply its full force of air. When I met the laundryman later he said the machine was doing real well. Now he thinks we make as good gas in San Jose as they do in San Francisco, thanks to the "elbow grease." Oh, it is the best lubricant in the world, in its place.

There was no discussion on Mr. Gregory's paper.

[To be Continued.]

Coal Washing in Virginia.

The *Tradesman* says that the coal screening, washing and coking plant of the Tom's Creek Coal and Coke Company, at Tom's Creek, West Virginia, is not only itself interesting as a modern and complete plant, but evidences the rapid strides of the coal and coke industry in Wise county and the fields adjacent, whose marvelous development began so late as the year 1892. The plant is complete in every department, and as nearly automatic as it can be. It is located near the base of a mountain, in such a position as to make the delivery of the coal from the several mines inexpensive, and at the same time use the natural slope of the mountain advantageously for the foundations and erection of the buildings. Here the coal is assembled in tram cars from the mines and is tippled over an automatic, full open dump into a receiving hopper, whence it is fed into a double strand steel scraper conveyor. This conveyor carries the coal down an incline 310 feet, retarding the flow in such a manner as to prevent breakage. The lower 20 feet of

1. "Our Patrons: How to Treat Them," by S. M. Dole, JOURNAL, March 14, 1898, p. 414.

the conveyor is in the form of a screen, through the meshes of which the greater portion of slack falls, leaving only the lump coal to be discharged on to an endless steel apron conveyor, which is about 50 feet long by 4 feet wide, and forms the picking table. The speed here is slow, thus affording ample time for the pickers to separate and remove the impurities.

From the picking table the coal is discharged on to a lump screen over which the lump coal passes into a center dump basket, which lowers the coal with a minimum of breakage into railway cars beneath. When it is not desired to load the lump coal on cars it may be delivered from the screen into a storage bin, and from this bin conveyed to a disintegrator, which reduces it fine enough for coking. The finer coal which falls through the meshes of the lump screen passes in turn over a nut screen, over which the nut coal passes into spiral conveyors, which carry it to railway cars. When it is so desired the nut may be diverted from the cars and delivered into an elevator, which delivers into a Jeffrey Robinson coal washer. All the slack coal, both that which falls through the screen at the foot of the long retarding conveyor, as well as that which falls through the nut screen, is also elevated to the washer.

The washer is constructed with a conical tank, in which the coal is agitated by revolving stirring fingers attached to a vertical shaft; at the same time it is brought in contact with water forced into the tank from below. The force of the water is nicely adjusted, so as to be just sufficient to raise the particles of coal and at the same time allow the slate and other impurities to settle to the bottom into a receiving chamber from whence they are discharged at intervals by means of valves. The coal passes from the top of the washer in the overflow and is conveyed over draining screens to a spiral conveyor, which in turn distributes it into the storage bin. From the storage bin a spiral conveyor also takes it to the disintegrator. After the coal passes through the disintegrator it is elevated to a scraper conveyor which discharges it into the larry bins ready for the coke ovens.

The power house is next to the tipple building, and is of brick. The power is supplied by two engines, one being directly connected with the disintegrator also drives the elevator and conveyor which carry the disintegrated coal to the larry bins. The other engine drives a line shaft from which the remainder of the machinery is driven. The plant, as described, will handle 2,000 tons of coal per day in almost any manner desired, supplying 215 coke ovens. It may all be shipped by car as coal or may all be disintegrated for coking, or again portions of it may be shipped or coked as desired. The washer makes it practical to market the largest possible percentage of the mine product without added expense or labor.

Experience with Street Lighting at Munich, by Means of Incandescent Gas Lamps.

Mr. Frederick Egner (in abridging an article on this subject, in the *Journal für Gasbeleuchtung*, by Dr. E. Schilling) says that the Doctor directs the reader's attention to the well-known prevailing conditions which govern the public lighting of his city.[1] He says that, owing to the principal thoroughfares of the city being lighted by electricity, the higher grade of illumination thus produced made it almost obligatory that in the neighboring gas lighted streets the lighting effects should be heightened. In consequence the municipal authorities determined that all public lamps should be furnished with incandescent burners. The beginning was made in the spring of 1897, and all the gas street lamps, of which there were 5,015, were equipped by October 1st of the same year. This made it possible that, between the later date and April 1st, 1898, by close observation a pretty accurate idea could be had as to the cost of the system on a large scale; and especially the cost of operating and maintaining the same.

The principal item of expense was found to be the mantles, and that indeed had the greatest influence upon the total cost. Before inaugurating the incandescent gas system of street lighting circular inquiries were sent to a number of cities, with the result that there appeared to be a considerable diversity of opinion concerning the number of mantles required for renewals per annum.

The replies received gave all the way from 2 to 15 as the number found necessary. "Doubtless," remarks the author, "the quantity used is affected somewhat by local conditions, according as there may be more or less traffic on a street; or as perhaps the lamps may be supported, either on posts or on brackets fastened to the walls of adjoining houses; or as the attendance may be good or indifferent. But under normal conditions such differences as those mentioned can scarcely be thought to exist. * * * We found, however, that in calculations with reference to this sort of lighting five mantles, on the average, should be figured on as required per year. That number includes the original mantle put in with the first installation." The author then goes on to say they found that a trifle more than 2 chimneys and 4½ mantle holders per year would be the average used for each lamp; and this whether the lighting was only one-half or all night. To operate and maintain this plant of 5,015 burners required the services of 1 superintendent, 9 mounters and 12 helpers.

"On the whole, the streets were much better lighted than when the old slit burners were used; and, in fact, the illumination compared favorably with the electrically lighted streets. Further, the incandescent gas burner street lamps effected quite a considerable saving for the city and the Company."

1. Munich, the capital of Bavaria, has a population not far from 250,000.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

SUPPLEMENTING our item of last week, respecting the change of ownership in the Williamsport (Pa.) Gas Company, it may now be said that control in the property (which had been vested in the John G. Reading estate for some years) was purchased by Messrs. Wilson & Stephens, of this city. The plans of the new proprietors, for the extension of the plant, contemplate the putting down of 10 miles of mains, the erection of a holder to retain 500,000 cubic feet, and the construction of a modern type of coal gas generating apparatus.

THE proprietors of the Kenosha (Wis.) Gas, Electric Light and Fuel Company have awarded to the Western Gas Construction Company a contract for the reconstruction of the Kenosha plant, complete. The agreement provides for a 5 ft. 6 ins. double superheater type of improved Lowe water gas apparatus, boilers, elevator, iron floor, exhauster, etc.; in fact, everything requisite to put the plant in complete modern shape.

MR. CARL H. GRAF, formerly with the Lawrence (Mass.) Gas Company, has been appointed Superintendent of the gas annex of the Hackensack (N. J.) Gas and Electric Company.

TENDERS for the public lighting of Covington, Ky., so far as the district of that city now lighted by gasoline is concerned "by means of gasoline, gas or electricity," will be opened Thursday afternoon. The plan or scheme of the tender seems a deliberate attempt to benefit the Covington electric pushers.

ARRANGEMENTS are being perfected at Yonkers, N.Y., whereby the residents of the outlying district of Ludlow can count upon a better gas supply than has been their portion of late. The principal change is in connection with the 12-inch main recently laid through Hawthorne avenue and the holder of the old Municipal Gas Company, which, if we mistake not, is located in Ludlow.

AT a meeting of the Consolidated Gas, Electric Light, Heat and Power Company, of Newburg, N. Y., the officers elected were: Directors, B. B. Odell, Jr., C. L. Waring, Chas. T. Goodrich, Thos. W. Gavey, Alfred Bridgman, H. B. Beekman, Joseph A. Sneed, J.V. Jordan and H. B. Odell; President, B. B. Odell, Jr.; Vice-President, Alfred Bridgman; Secretary, C. L. Waring; Treasurer, C. T. Goodrich.

MANAGER PULLEN, of the Pulaski Gas Light Company, of Little Rock, Ark., has completed the plans necessary for the extension of the Company's distributing mains into and through the adjoining territory of North Little Rock.

MANAGER COYKENDALL, of the Kingston (N. Y.) Electric Company, has announced that hereafter the gross rate for gas supplied by his concern shall not exceed $2.40 per 1,000 cubic feet. The concession amounts to 10 cents per 1,000. The old rate of discounts for prompt payment remains unchanged. It might be in order to remark that the new gas rate is none too low.

COL. ROBERT E. COXE, who since 1858 has acted as President and Manager of the Huntsville (Ala.) Gas Light Company, retired from the position of Manager early this month. His successor in the active management of the business is Mr. Oscar E. Hundley. The Colonel, however, retains the Presidency.

THE Municipal Gas Company, of Albany, N.Y., it is reported, has purchased the site and buildings, formerly occupied by the Germania Fire Insurance Company at No. 112 State street. If the report is true,

and it has every appearance thereof, the purchase must mean that the Company is shortly to occupy offices suitable to the magnitude of the business that it transacts.

At a recent meeting of the Lawrence (Kas.) City Council the Committee on Gas, Water and Electric Light reported in favor of offering to the local Gas Company a franchise for three years, the main considerations in the agreement stipulating: First, the price to ordinary consumers to be $1.25 per 1,000 cubic feet; the rate to the city, where gas is used by meter measurement, to be even with that paid by ordinary users; the city to pay $15 per annum for each public lamp, the lamps to be burned on a moonlight table.

The following is the official announcement made by Mr. A. W. Rogers, Treasurer of the Beverly (Mass.) Gas and Electric Company, respecting the current reduction in gas rates at the place named:

"In accordance with our usual custom to reduce the price of gas each year, as much as the condition of the business will allow, we are pleased to inform our patrons and the public that, at a meeting of our Directors, held July 27th, 1898, it was voted that: On and after October 1st, 1898, the price of gas be reduced, from $1.90 to $1.80 per 1,000 cubic feet, with a discount of 20 cents per 1,000 feet, when bills are paid on or before the 15th of the month in which they are presented, making the net price $1.60 per 1,000 cubic feet."

The proprietors of the Easthampton (Mass.) Gas Company have established a flat rate of $2 per 1,000 cubic feet, on all bills showing a consumption of 500 cubic feet or more per month. Hitherto the rates were: $2.25 per 1,000 on illuminating account and $2 per 1,000 on fuel account. Separate meters have been used in connection with the fuel supply.

The proprietors of the Sarnia (Ont.) Gas and Electric Light Company are quite well satisfied with the operation of the water gas apparatus recently installed by the Western Gas Construction Company.

Mr. Carl H. Graf, who resigned from the service of the Lawrence (Mass.) Gas Company to accept (as noted elsewhere) charge of the gas division of the Hackensack (N. J.) Gas and Electric Company's business, was, on July 30th, presented by the employees of the Lawrence Company with a handsome loving cup, suitably engraved.

At the annual meeting of the New Bedford (Mass.) Gas and Edison Light Company the following officers were elected: Directors, Gilbert Allen, Horace G. Howland, David B. Kempton, Thomas H. Knowles, John P. Knowles, Jr., Charles H. Lawton, John W. Macomber, Charles R. Price, George R. Stetson, Frederic Taber, Andrew G. Pierce, Oliver Prescott, Jr., and John S. Perry; Treasurer and Clerk, Chas. R. Price.

A correspondent in Bridgeport, Conn., forwards the following clipping from the Torrington (Conn.) *Register*, under date of August 4th: "The Torrington Electric Light Company held an important meeting last night and decided to take a step that can be considered in only one way, and that is as being favorable to the gas plant project as agitated in this town. The present capital stock of the Company is $24,000, and it was voted to increase this amount to $50,000. The Company is not empowered under its charter to make an increase, and this action is a necessary preliminary to putting the concerns on a fit basis for the establishment of a gas plant. The business men of the place are invited to interest themselves in this increase, as there is no doubt they will do. For the final establishment of the plant a further increase of stock, to $100,000 or $150,000, will be a conditional necessity. An officer of the Company told a *Register* reporter that the corporation would probably petition the next Legislature for power with which to meet the requirements. The Legislature meets the first of next year and the power would probably not be granted before well toward the close of the session, in July or August. So, if everything goes well—and the signs are certainly propitious—Torrington will be in a position to have gas lighting by the latter part of 1899."

Proceedings to wind up the affairs of the Redding (Cal.) Gas Company have been virtually concluded. The legal charge of the dissolution is in the hands of Mr. F. P. Primm.

At the annual meeting of the Lexington (Mass.) Gas Light Company these officers were elected: Directors, Josiah Quincy, H. B. McDowell, H. W. Bates, L. A. Saville, E. I. Garfield, W. A. Haskell and R. T. Tabor; Treasurer, H. B. McDowell.

"Mayor Weaver, of Louisville, Ky.," says a correspondent, "is considering the appointment of one of the three arbitrators provided for by the charter of the Louisville Gas Company to fix the price that the Company may charge for gas during the next five years. The Mayor is given the selection of one arbitrator, the Gas Company names one, and the third is chosen by the two first named. The charter further requires that the third member must not be a resident or taxpayer of Jefferson County. All of them must be civil engineers, and must examine the books of the Company, so as to decide upon a uniform gas rate that will not yield the Company a dividend in excess of 8 per cent. on its stock." Our correspondent adds: "As the Company is only paying 4 per cent. upon its capital might it seem reasonable for the Company to insist that the price that it may charge for gas be raised to the point that would enable it to pay the maximum dividend allowed under its charter rights."

An attempt is being made to revive the proposed Gas Company for Winthrop, Mass. Such an enterprise would, it seems to us, benefit its promoters.

The Board of Gas and Electric Light Commissioners, of Massachusetts, has rendered an important opinion, in the instance of the petition of the Municipal Light Board, of Hudson, Mass., for the right to charge ordinary customers the rate of 20 cents per kilowatt hour for an incandescent lighting service. The plant at Hudson is operated on municipal account, and the decision of the Commissioners is noteworthy, in that under it the Commissioners declare that lighting current may not be sold for a rate or price less than sufficient to pay for the generating and supplying thereof. Having reviewed the case and the testimony submitted, the Board says:

"It clearly appears that the cost for this service is considerably in excess of the present price of 20 cents per kilowatt hour, which the petition asks the Board to approve. It was conceded in the petition, and at the hearing, that this might be the fact. The Board, however, in view of the short experience the town has had in operating its plant, is willing to give its assent to the continuance of present prices until the first Monday of January, 1899. If, meantime, the conditions are so improved as to warrant a belief that the commercial business can be brought to a paying basis within a reasonable time, the Board will give the matter favorable consideration further. In towns operating electric light plants, where the conditions are wanting to justify the effort to create a commercial business of sufficient volume to place it upon a paying basis within a reasonable time by the encouragement of low prices, the Board finds no grounds for granting a petition to sell electricity at less than cost. For the application of public funds raised by taxation to meet the deficit so created in the operating expenses of a municipal plant is repugnant to the idea of a fair and equal sharing in the benefits as well as the burdens of government." Chairman Barker, of the Commission, is not in entire accord with the decision, as witness this statement from him, which accompanied the above noted findings of his colleagues:

"I regret that I am obliged to dissent from a portion of the foregoing report. As I understand this it virtually declares that unless the conditions warrant a belief that the prices which at the time may be less than the cost computed as the statute requires are likely to so develop the commercial business that the cost may in a reasonable time be reduced to equal those prices, there is no reason for allowing those prices or any others less than such cost to continue; that, therefore, where prices to cover such cost cannot be obtained the business must be discontinued.

"The Legislature, by the statute cited in the report, clearly recognized that this business might not prove a financial success, and that it might be necessary for a town having once entered upon it, to either wholly abandon it or to carry it on at a loss. An undertaking of this character is essentially a business enterprise, and in the main the responsibility for conducting it in accord with sound and well-recognized business principles must rest with those chosen to supervise it and with the town itself. Any other authority will interfere only with reluctance, and to secure some clearly defined public advantage.

"I believe that any one familiar with the Hudson situation will consider it extremely doubtful whether the commercial business can be so developed that it will be upon a remunerative basis, or whether the present business could be held if much advance is made from the present rate.

"In view of this, applying the proposition in question to the town of Hudson, it means that, after Jan. 1, 1899, or at the end of some particular period thereafter, this Board will not allow the town to sell at a less price than say 35 cents per kilowatt hour or such other price as may prove equal to cost. And yet, even at the prices now charged, the receipts from commercial lighting exceed all the operating expenses of the plant and only fail to meet the fixed charges. If the commercial business were wholly abandoned, the reduction in either the operating expenses or the fixed charges would be relatively small. The commercial business, therefore, at present prices, makes the cost to the town for its street lights appreciably lower than it would be if the commercial lighting were abandoned.

"In these respects the town of Hudson is but a type of several other towns, perhaps of all those which supply both commercial and public lights.

"As the logical result of the proposition referred to seems to be to bring unnecessary embarrassment to many, perhaps all, of the towns which have a commercial business, and to increase the amounts to be raised by taxation for the support of their plants, I am unable to assent to it."

THE AMERICAN GAS LIGHT JOURNAL

MONDAY, AUG. 15, 1898.

The Market for Gas Securities.

The market for city gas shares was quite active at the opening of the week, but the bulk of the trading was done at figures not much out of line with those for last week. Standards were strong, both the common and preferred advancing two points in the bid price. Consolidated sold above 200, and then sagged off to 199. The opening price to-day (Friday) was 198 to 199, with no reported sales up to noon. Mutual lost its 5 point gain of a week ago, and New Amsterdam was dull.

Brooklyn Union advanced sharply, selling above 128. The increase in the earning power of this Company is little short of phenomenal, and many conservative investors express their belief that the stock will go to 150. Peoples gas, of Chicago, opened to-day at 101½ to 101¾, ex-dividend 1½ per cent. Baltimore Consolidated crossed 65 during the week; it is now 65¼ to 65½. Bay State is again under 4, and more suits have been instituted in regard to its "properties." Lacledes are a trifle weaker, as is Buffalo City gas. The general situation still seems to favor advanced prices.

Gas Stocks.

Quotations by Frederic B. Cochran & Co., Brokers and Dealers in Gas Stocks.

20 and 22 Broad Street, New York City.

Aug. 15.

☞ All communications will receive particular attention
☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$36,230,000	100	198	199
Cental Union, Bonds, 5's	3,000,000	1,000	104	105
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	114	.
Metropolitan Bonds	658,000	.	108	112
Mutual	3,500,000	100	330	340
" Bonds	1,500,000	1,000	100	102
Municipal Bonds	750,000	.	..	.
New Amsterdam Gas Co.	13,000,000	100	31	31½
Preferred	10,000,000	100	75¾	76½
Bonds, 5's	11,000,000	1,000	102¼	102⅝
Northern Union, Bonds, 5's	1,250,000	1,000	94½	95½
New York and East River.. Bonds 1st 5's	3,500,000	1,000	111	113
" 1st Con. 5's	1,500,000	..	106	109
Richmond Co., S. I.	348,650	50	70	..
" Bonds	100,000	1,000	..	..
Standard	5,000,000	100	142	145
Preferred	5,000,000	100	158	163
Bonds, 1st Mortgage, 5's	1,500,000	1,000	112	114
Yonkers	299,65	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	127½	128
" " Bonds (5's)	15 000,000	1,000	115	115½
Bay State	50,000,000	50	3¾	3⅞
" Income Bonds	2.000.000	1,000	..	75
Binghamton Gas Works.	450,000	100	..	..
" 1st Mtg. 5's	450,000	1,000	..	..
Boston United Gas Co.— 1s Series S. F. Trust	7,000,000	1,000	..	92
2d " " "	3,000,000	1,000	70	..
Buffalo City Gas Co.	5,500,000	100	22	23¾
" " Bonds, 5's	5,250,000	1,000	95½	96
Central, San Francisco	2,000,000	..	105	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Columbus	1,144,700	100	89	91
1st Mortgage	1,207,000	1,000	101	103½
Consumers, Jersey City	2,000,000	100	78	85
" Bonds	600,000	1,000	100	103¾
Cincinnati G. & C. Co.	8,500,000	100	203¾	203½
Consumers, Toronto	1,600,000	50	184½	187
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Consolidated, Baltimore	11,000,000	100	65¼	65¾
Mortgage, 6's	3,800,000	..	107	107½
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,400 000	..	..	..
Consolidated Gas Co. of N.J.	1,000,000	100	..	..
" Con. Mtg. 5's	380,000	1,000	..	..
Consolidated G. & E. Co.'s, Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co.	4,500,000	50	58	60
" Prior Lien 5's	4,538,000	1,000	94	..
Detroit Gas Co., 5's	428,000	1,000	..	..
" Inc. 5's	84,000	100	..	..
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Fort Wayne	2,000,000	..	75	80
" Bonds	2,000,000	..	88	91
Grand Rapids Gas Lt. Co.	1,000,000	50	..	..
" 1st Mtg. 5's	1,125,000	1,000	..	..
Hartford	750,000	25	..	145
Indianapolis	2,000,000	..	115	125
" Bonds, 6's	2 650,000	..	106	107
Jackson Gas Co.	250,000	50	..	..
" 1st Mtg. 5's	250,000	1,000	..	..
Jersey City	750,000	20	180	..
Lafayette Gas Co., Ind.	1,000,000	100	78	88
Bonds	1,000,000	1,000	90	91
Louisville	2,570,000	50	..	..
Laclede, St. Louis	7,500,000	100	53¾	54
Preferred	2,500,000	100	95	96
Bonds	10,000,000	1,000	104⅞	105
Madison Gas & Elec. Co.	400,000	100	..	..
" 1st Mtg. 6's	350,000	1,000	..	..
Montreal, Canada	2,000,000	100	200	..
Newark, N. J., Gas Co.	1,000,000	..	200	220
Bonds, 6's	4,000,000	..	128	130x
New Haven	1,000,000	25	252	..
Nashville Gas Lt. Co.	1,000,000	50	110	..
Oakland, Cal.	2,000,000	..	52	53
" Bonds	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	101¼	101¾x
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,00	1,000	..	108
2d "	2,500,000	1,000	104	105
Peoples, Jersey City	500,000	50	..	175
Rochester Gas & Elec. Co.	2,150,000	50	..	..
Preferred	2,150,000	50	88	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	10,000,000	100	85⅝	86
St. Paul Gas Light Co.	1,500,000	100	49	51
1st Mortgage 6's	650,000	1,000	84	87
Extension, 6's	600,000	1,000	..	..
General Mortgage, 5's	2,428,000	1,000	88	90
St. Joseph Gas Co.	1,000,000	100	..	..
" 1st Mtg. 5's	750,000	1,000	..	..
Syracuse, N. Y.	1,750,000	100	17	18
Bonds	1,500,000	1,000	94	97
Washington, D. C	2,000,000	20	250	..
Western, Milwaukee	4,000,000	100	85¼	86
Bonds, 5's	3,556,000	.	101¾	102½
Wilmington, Del.	550,000		50	900

Advertisers' Index.

GAS ENGINEERS.

	Page
Wm. Henry White, New York City	255
Fred. Bredel, Milwaukee, Wis.	242
Geo. R. Rowland, New York City	255
The Western Gas Construction Co., Fort Wayne, Ind.	244
Humphreys & Glasgow, New York City	248
American Gas Co., Phila., Pa.	242
David Leavitt Hough, New York City	257
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	255
Baxter & Lynn, Detroit, Mich.	241

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md.	253
United Gas Improvement Co., Phila., Pa.	247
Burdett Loomis, Hartford, Conn.	254
National Gas and Water Co., Chicago, Ills.	249
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	255
The Western Gas Construction Co., Fort Wayne, Ind.	244
Humphreys & Glasgow, New York City	248

GAS WORKS APPARATUS AND CONSTRUCTION.

James R. Floyd's Sons, New York City	256
Continental Iron Works, Brooklyn, N. Y.	254
Deily & Fowler, Phila., Pa.	256
Kerr Murray Mfg. Co., Fort Wayne, Ind	252
Stacey Mfg. Co., Cincinnati, Ohio	255
Bartlett, Hayward & Co., Baltimore, Md.	253
Davis and Farnum Mfg. Co., Waltham, Mass.	252
R. D. Wood & Co., Phila., Pa.	254
Isbell-Porter Company, New York City	254
Fred. Bredel, Milwaukee, Wis.	242
United Gas Improvement Co., Phila., Pa.	247
Berlin Iron Bridge Co., East Berlin, Conn.	238
National Gas and Water Co., Chicago, Ills.	249
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	255
The Western Gas Construction Co., Fort Wayne, Ind.	244
Humphreys & Glasgow, New York City	248
Gas Engineering Co., Pittsburgh, Pa.	252
American Gas Co., Phila., Pa.	242
Logan Iron Works, Brooklyn, N. Y.	256
Riter-Conley Co., Pittsburgh, Pa.	248
Baxter & Lynn, Detroit, Mich.	241

SCRUBBERS AND CONDENSERS.

G. Shepard Page's Sons, New York City	255
R. D. Wood & Co., Phila., Pa.	254
James R. Floyd's Sons, New York City	256
Continental Iron Works, Brooklyn, N. Y.	254
Gas Engineering Co., Pittsburgh, Pa.	252
Logan Iron Works, Brooklyn, N. Y.	256
Riter-Conley Co., Pittsburgh, Pa.	248

TAR AND CARBONIC ACID EXTRACTOR.

G. Shepard Page's Sons, New York City	255
R. D. Wood & Co., Phila., Pa.	254

AMMONIA CONCENTRATORS.

Michigan Ammonia Works, Detroit, Mich.	239
G. Shepard Page's Sons, New York City	255
Gas Engineering Co., Pittsburgh, Pa.	252

GAS METERS.

John J. Griffin & Co., Phila., Pa.	234
American Meter Co., New York and Philadelphia	259
Helme & McIlhenny, Phila., Pa.	259
D. McDonald & Co., Albany, N.Y.	257
Nathaniel Tufts Meter Co., Boston, Mass.	238
Maryland Meter and Mfg. Co., Baltimore, Md.	258
Metric Metal Co., Erie, Pa	258
Keystone Meter Co., Royersford, Pa.	258
Detroit Meter Company, Detroit, Mich.	239

PREPAYMENT METERS.

American Meter Co.. New York and Philadelphia	259
John J. Griffin & Co., Phila., Pa.	234
D. McDonald & Co., Albany, N. Y.	257
Helme & McIlhenny, Phila., Pa.	259

GAS AND WATER PIPES.

Ohio Pipe Co., Columbus, Ohio	257
M. J. Drummond & Co., New York City	257
R. D. Wood & Co., Phila., Pa.	254
Warren Foundry and Machine Co., New York City	257
Donaldson Iron Co., Emaus, Pa.	257
Utica Pipe Foundry Co., Utica, N. Y.	257

PIPE CUTTERS.

The Anderson Pipe Cutter Co., East Boston, Mass.	241

PIPE JOINTS.

Bayles Engineering Co., New York City	239

STEAM BLOWER FOR BURNING BREEZE.

H. E. Parson, Brooklyn, N. Y.	249

GAS COALS.

Penn Gas Coal Co., Phila., Pa.	251
Perkins & Co., New York City	250
Despard Gas Coal Co., Baltimore, Md.	251
Westmoreland Coal Co., Phila., Pa.	251
Berwind-White Coal Mining Co., New York and Phila.	250
W. D. Althouse & Co., Phila., Pa.	251

CANNEL COALS.

Perkins & Co., New York City	250
W. D. Althouse & Co., Phila., Pa.	251
Greasy Creek Cannel Coal & Tramway Co., Chicago, Ills.	249

GAS ENRICHERS.

Standard Oil Co., New York City	251
The Sun Oil Co., Pittsburgh, Pa.	251

COKE CRUSHER.

C. M. Keller, Columbus, Ind.	251

GAS GAUGES.

The Bristol Co., Waterbury, Conn.	239

GAS GOVERNORS.

Connelly Iron Sponge and Governor Co., New York City	249
Isbell-Porter Co., New York City	254
R. D. Wood & Co., Phila., Pa.	254
Wm. M. Crane & Co., New York City	58

CEMENTS.

C. L. Gerould & Co., Mount Vernon, N.Y.	240

RETORTS AND FIREBRICKS.

J. H. Gautier & Co., Jersey City, N. J.	240
B. Kreischer & Sons, New York City	240
Adam Weber, New York City	240
Laclede Firebrick Mfg. Co., St. Louis, Mo.	240
Cyrus Borgner, Phila., Pa.	240
James Gardner, Jr., Pittsburgh, Pa.	240
Henry Maurer & Son, New York City	240
Baltimore Retort and Firebrick Co., Baltimore, Md.	240
Parker-Russell Mining and Mfg. Co., St. Louis, Mo.	240
Brooklyn Firebrick Works, Brooklyn, N. Y.	240
F. Behrend, New York City	241

REGENERATIVE FURNACES.

Bartlett, Hayward & Co., Baltimore, Md. ... 253
Fred. Bredel, Milwaukee, Wis. ... 242
J. H. Gautier & Co., Jersey City, N. J. ... 240
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. ... 240
Adam Weber New York City ... 240

SELF-SEALING MOUTHPIECE DOORS.

Isbell-Porter Co., New York City ... 254
Continental Iron Works, Brooklyn, N.Y. ... 254
G. Shepard Page's Sons, New York City ... 255
Logan Iron Works, Brooklyn, N. Y. ... 256
R. D. Wood & Co., Phila., Pa ... 254

INCANDESCENT GAS LAMPS.

Welsbach Commercial Co., Phila., Pa. ... 246
Victor Incandescent Company, New York City ... 239
Hugo Cahen, Berlin, Germany ... 239

MICA GOODS.

The Mica Mfg. Co., New York City ... 239

BURNERS.

C. A. Gefrorer, Phila., Pa. ... 254
Wm. M. Crane & Co., New York City ... 58

LAVA GAS TIPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn. ... 238

STREET LAMPS.

Welsbach Street Lighting Co., New York and Phila. ... 248

PURIFYING MATERIALS.

Connelly Iron Sponge and Governor Co., New York City 249
Greenpoint Chemical Works, Brooklyn, N.Y. ... 241
Henry W. Douglas, Ann Arbor, Mich ... 249
Gas Purification and Chemical Co., Ltd., London ... 249

EXHAUSTERS.

The P. H. & F. M. Roots Co., Connersville, Ind ... 243
Isbell-Porter Company, New York City ... 254
Connelly Iron Sponge and Governor Co., New York City 249

VALVES.

Ludlow Valve Manufacturing Co., Troy, N. Y. ... 244
Chapman Valve Manufacturing Co., Boston, Mass. ... 244
R. D. Wood & Co., Phila., Pa ... 254
Continental Iron Works, Brooklyn, N. Y. ... 254
The P. H. & F. M. Roots Co., Connersville, Ind. ... 243
Isbell-Porter Co., New York City ... 254
The Western Gas Construction Co., Fort Wayne Ind. ... 244

ELECTRICAL APPARATUS.

Wm. Henry White, New York City ... 255

GAS ENGINES.

Otto Gas Engine Works, Phila., Pa. ... 260
Backus Water Motor Co., Newark, N. J. ... 238

ENGINES AND BOILERS.

The Hazelton Boiler Company, New York City ... 241
W. G. & G. Greenfield, East Newark, N. J. ... 238

PURIFIER SCREENS.

John Cabot, New York City ... 239

GAS STOVES.

American Meter Co., New York and Philadelphia ... 245
Maryland Meter and Manufacturing Co., Baltimore, Md. 258
Keystone Meter Co., Royersford, Pa. ... 258
Wm. M. Crane & Co., New York City ... 58
The Schneider & Trenkamp Co., Cleveland, Ohio ... 59

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N. Y. ... 244

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md. ... 253
Continental Iron Works, Brooklyn, N. Y. ... 254
Deily & Fowler, Philadelphia, Pa. ... 256
Davis & Farnum Mfg. Co., Waltham, Mass. ... 252
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 252
Stacey Mfg. Co., Cincinnati, Ohio ... 255
R. D. Wood & Co., Philadelphia, Pa. ... 254
Logan Iron Works, Brooklyn, N. Y. ... 256
Riter Conley Co., Pittsburgh, Pa. ... 248

BOOKS, ETC.

Scientific Books ... 250
Digest of Gas Cases ... 251
Practical Photometry ... 240
Gas Flow Computers ... 259
Hughes' "Gas Works" ... 249
Poole on Fuels ... 253
Gas Engineer's Pocket-Book ... 241

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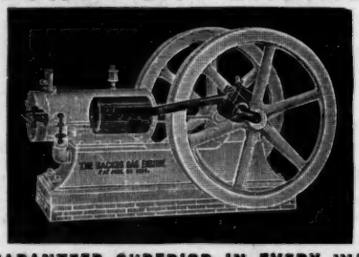

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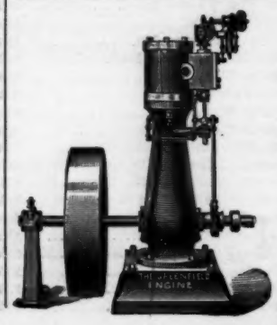

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Also Horizontal, Automatic and Variable Cut-off Engines.
Sizes from 3 to 75 Horse Power.
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Utilize Your Gas Liquor.
NO EXTRA LABOR OR OPERATING EXPENSES.

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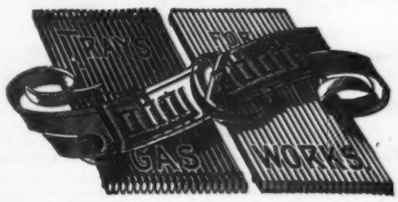

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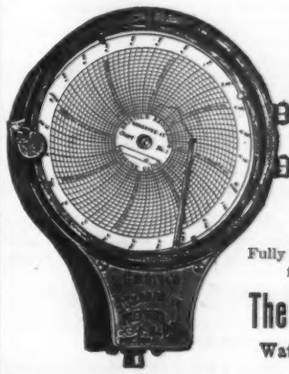

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Simple in Construction, Accurate in Operation
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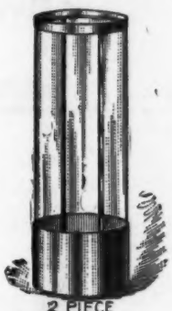

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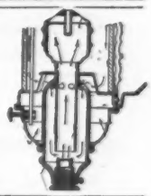

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This system includes: Pantaclinal Mains, which are gas tight when laid and remain gas tight during their life in the ground. Also

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To correct the evils incident to rigidity in lines already laid. To repair breaks in mains so that they will not break again. To permit the use, without future disadvantage from leaks or breaks, of stocks of hub and spigot mains on hand or ordered. To permit the relaying, as Pantaclinal lines, of hub and spigot lines now unduly troublesome and expensive to maintain, owing to heavy leakage and liability to fracture. To flexibly couple wrought iron pipes, and correct the enormous leakage which attends their use in gas distribution when laid with rigid couplings. To correct causes of leakage at service taps.

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American Patent No. 575,262, of December 1, 1897.

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Water Gas Cupola Linings, Fire Clay, Etc.

Exclusive Agents for

The Mitchell Half-Depth Regenerative Furnace.

This is the *original* coal-consuming Furnace for Retort Benches. Burns either Coal or Coke. Full and Half-Depth Regenerative Furnaces for Benches of 6's, 7's, 8's or 9's erected complete.

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LARGE-SIZE BOILERS IN STOCK.

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For Gas Purification.
Acts immediately, and more efficiently than any other purifying agent now in use.
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Examination Made of Gas Properties.
Values Ascertained, and
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Made in all sizes.

Will cut from 2 in. to 24 in.
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For Cutting Cast, Wrought Iron, Gas & Water Pipes.
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Now is the time to invest, when the first capital will be able to double itself in a single year. This is also the most delightful residence section in the United States.

We suggest to those desiring gas investments, in large or moderate amounts—with or without active business connections—to come here and investigate; or, what is the next best thing, write us for particulars and prospectus.

The accompanying cut shows the oil wells in the suburbs of Los Angeles from which the Companies under the NEW LOWE GAS PROCESS obtain their supply of oil.

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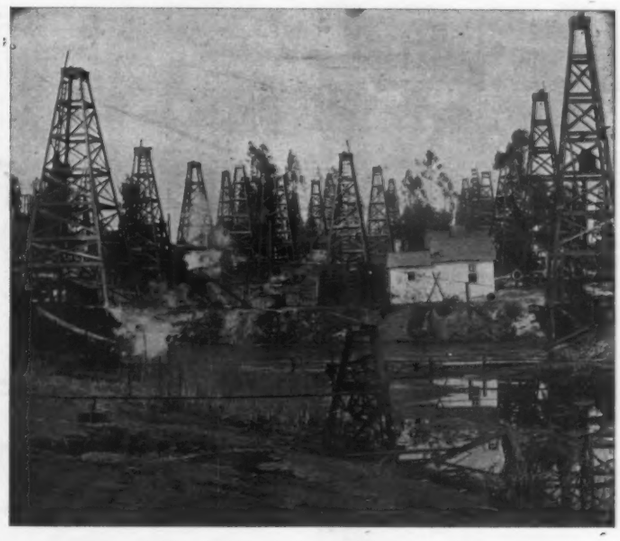

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KLONNE-BREDEL

Recuperative Furnaces, Washers, Condensers, Purifiers and Purifying Machines, Ammonia Plant, Coke Conveyers, Etc.

Complete Works Erected with Guaranteed Results.

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GUARANTEED TO REGULATE WITHIN ONE-TENTH OF AN INCH, WATER PRESSURE.

The Most Perfect Gas Governor on the Market.

MORE DIRECT IN ACTION. FEWER PARTS.
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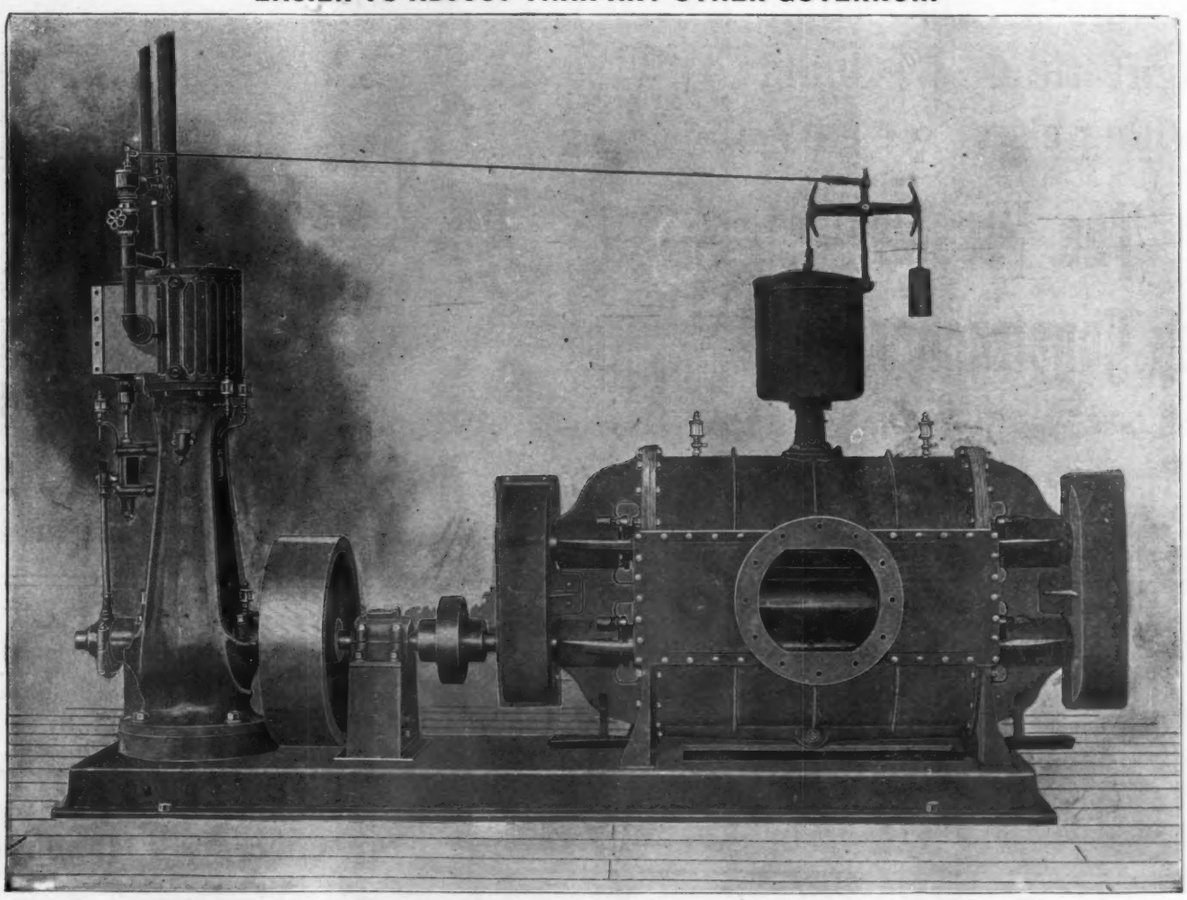

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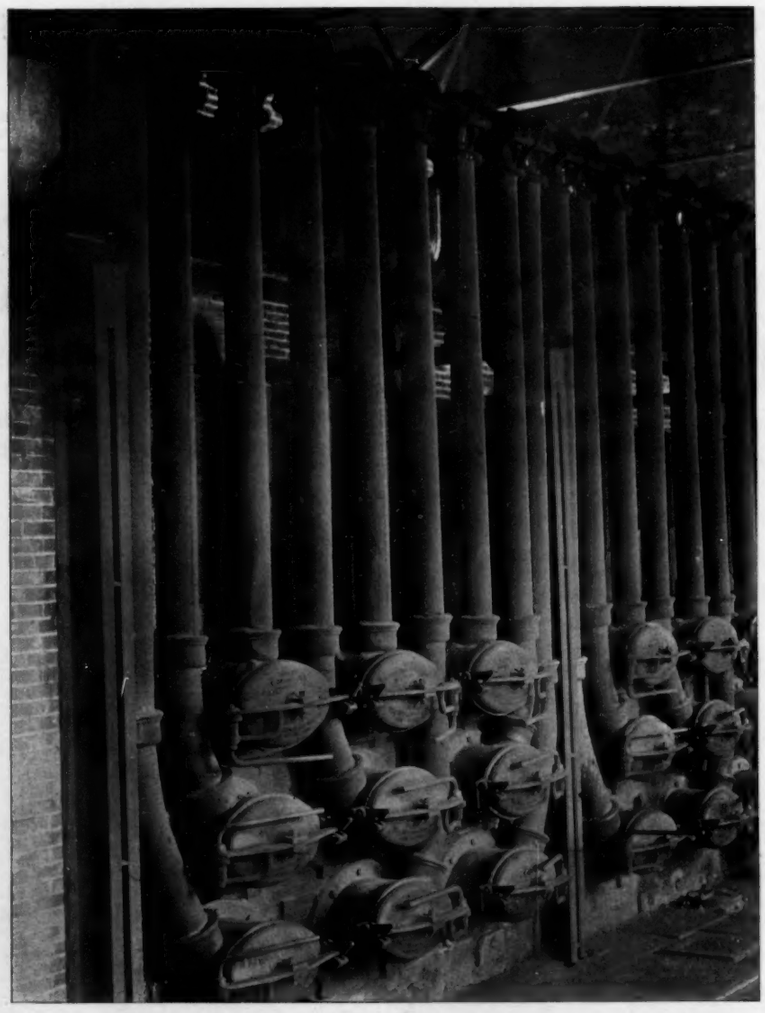

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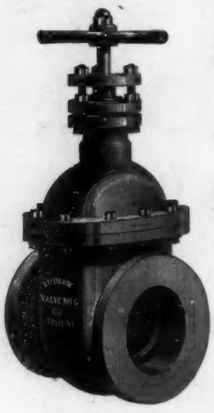

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—FOR—
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HOT GAS VALVES A SPECIALTY.
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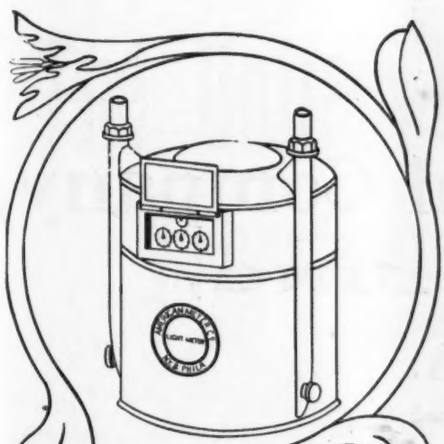

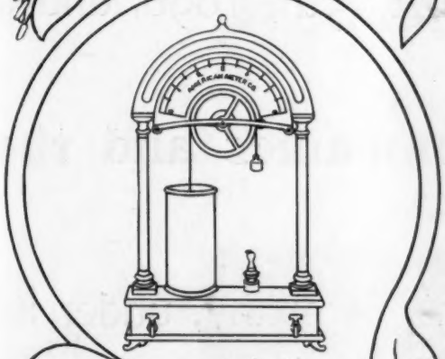

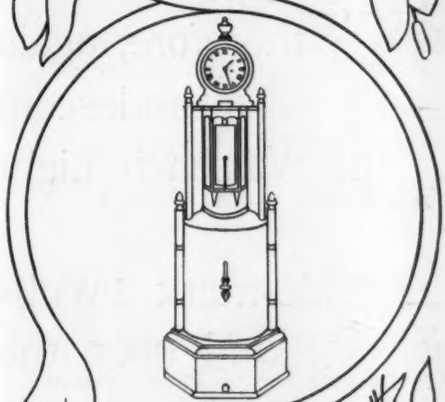

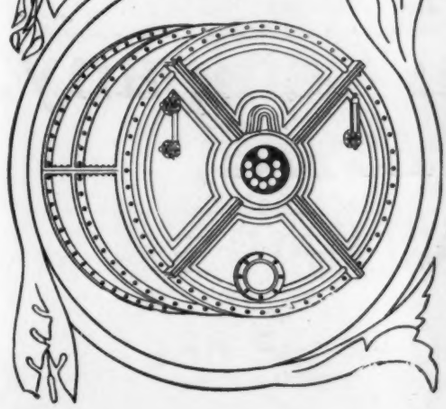

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AMERICAN METER CO.

ESTABLISHED 1834. INCORPORATED 1863.

NEW YORK AND PHILADELPHIA,

CHICAGO, ST. LOUIS,

SAN FRANCISCO.

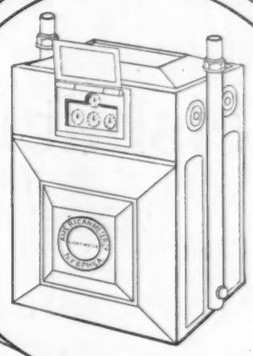
PUBLIC LIGHTING TABLE.

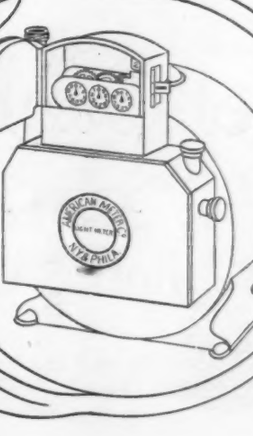
AUGUST, 1898.

Day of Week.	Date.	Table No. 1. Following the Moon. Light.	Extinguish.	Table No. 2. New York City. All Night Lighting. Light.	Extinguish.
				P.M.	A.M.
Mon.	1	No L. FM	No L.	7.10	3.30
Tue.	2	No L.	No L.	7.10	3.30
Wed.	3	7.40 PM	9.00 PM	7.10	3.30
Thu.	4	7.40	9.20	7.10	3.30
Fri.	5	7.40	9.50	7.10	3.30
Sat.	6	7.40	10.20	7.10	3.45
Sun.	7	7.30	10.50	7.10	3.45
Mon.	8	7.30 LQ	11.20	7.10	3.45
Tue.	9	7.30	12.00	7.10	3.45
Wed.	10	7.30	12.40 AM	7.10	3.45
Thu.	11	7.30	1.30	7.10	3.45
Fri.	12	7.30	2.20	7.10	3.45
Sat.	13	7.30	3.20	6.55	4.00
Sun.	14	7.20	4.10	6.55	4.00
Mon.	15	7.20	4.10	6.55	4.00
Tue.	16	7.20	4.10	6.55	4.00
Wed.	17	7.20 NM	4.10	6.55	4.00
Thu.	18	7.20	4.10	6.55	4.00
Fri.	19	7.20	4.10	6.55	4.00
Sat.	20	7.20	4.10	6.45	4.10
Sun.	21	7.20	4.20	6.45	4.10
Mon.	22	8.00	4.20	6.45	4.10
Tue.	23	8.40	4.20	6.45	4.10
Wed.	24	9.30 FQ	4.20	6.45	4.10
Thu.	25	10.20	4.20	6.45	4.10
Fri.	26	11.30	4.20	6 45	4.10
Sat.	27	12.40 AM	4.20	6.30	4.20
Sun.	28	2.00	4.30	6.30	4.20
Mon.	29	3.20	4.30	6.30	4.20
Tue.	30	No L.	No L.	6.30	4.20
Wed.	31	No L FM	No L.	6.30	4.20

TOTAL HOURS LIGHTING DURING 1898.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	210.40	January	423.20
February	186.40	February	355.25
March	181.20	March	355.35
April	166.10	April	298.50
May	156.40	May	264.50
June	144.30	June	234.25
July	147.30	July	243.45
August	157.10	August	280.25
September	169.50	September	321.15
October	186.00	October	374.30
November	204.30	November	401.40
December	218.30	December	433.45
Total, yr.	2129.30	Total, yr.	3987.45





Welsbach Commercial Company,

DREXEL BUILDING,

PHILADELPHIA.

New Price Lists will be issued August 15th, 1898, and a New Catalogue about September 1st.

Correspondence from Gas Companies and the trade generally is solicited.

Suits brought by the Welsbach Light Company, under its patents, against the manufacturers of infringing lights and mantles, are still pending and undetermined. We, therefore, again caution the public against the purchase of any incandescent mantle other than that made and sold by the Welsbach Light Company or its agents.

Every genuine Welsbach lamp has the trade-mark "Welsbach" conspicuously printed upon the package and upon the burner itself.

Welsbach Commercial Company,

DREXEL BUILDING,

PHILADELPHIA.

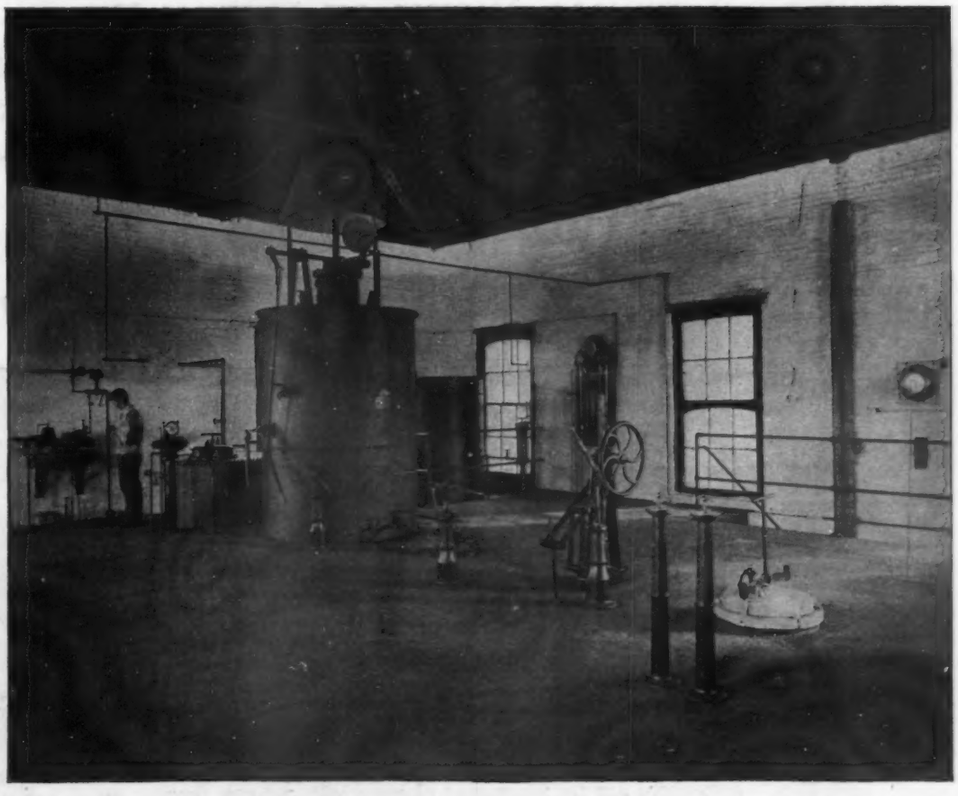
The United Gas Improvement Company,

DREXEL BUILDING, PHILA., PA.

The Standard Junior,

The Standard Double Superheater,

LOWE WATER GAS APPARATUS.



Total Built and under Construction,

288 Sets—Daily Capacity, 185,425,000 Cu. Ft.

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(31 NASSAU STREET.)
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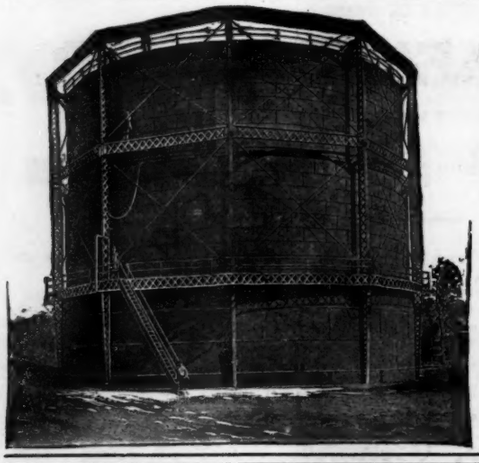

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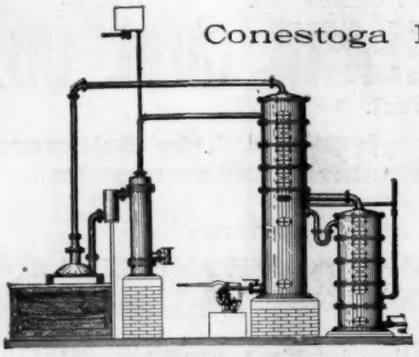

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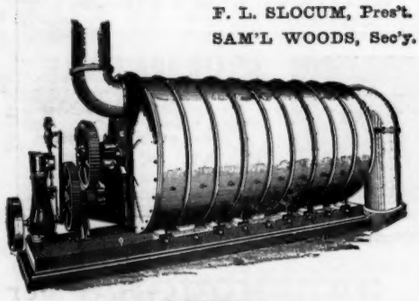

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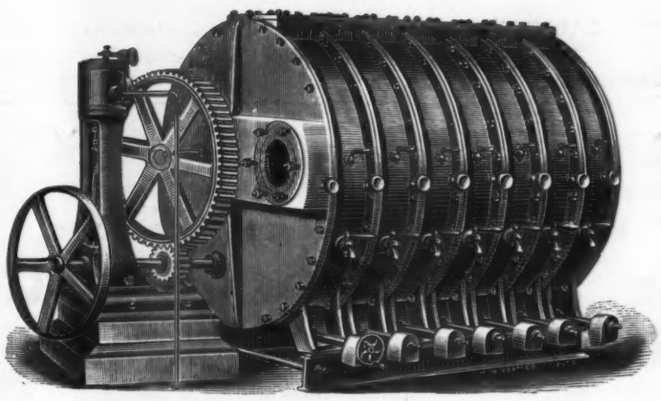

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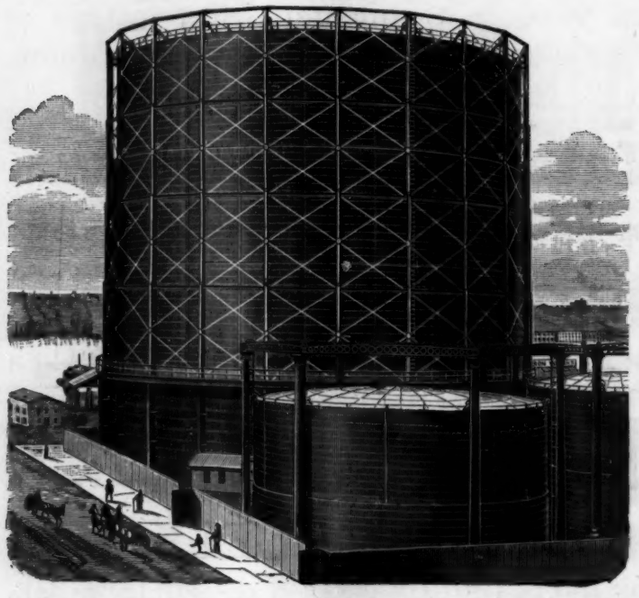

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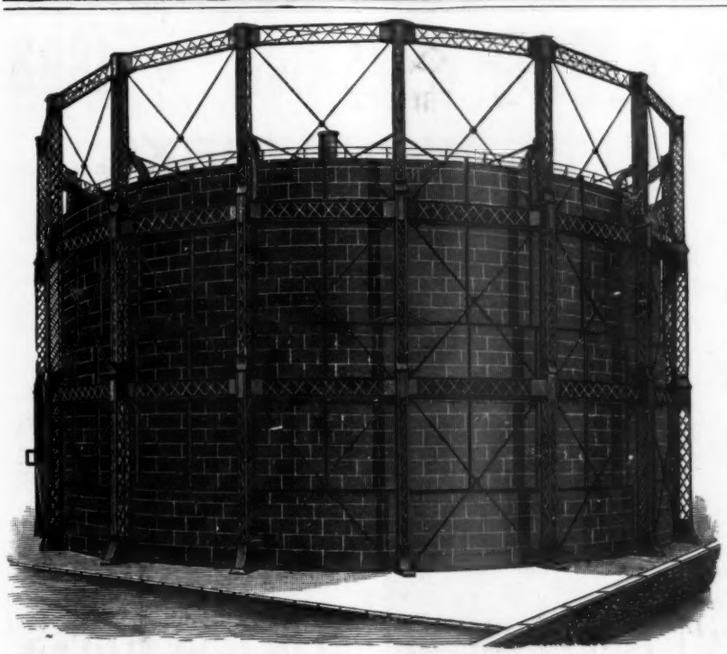

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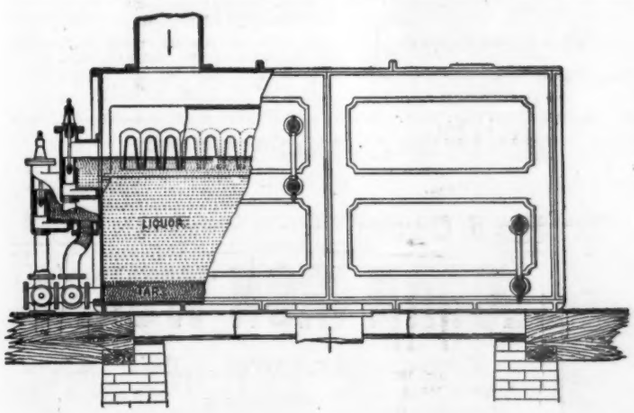

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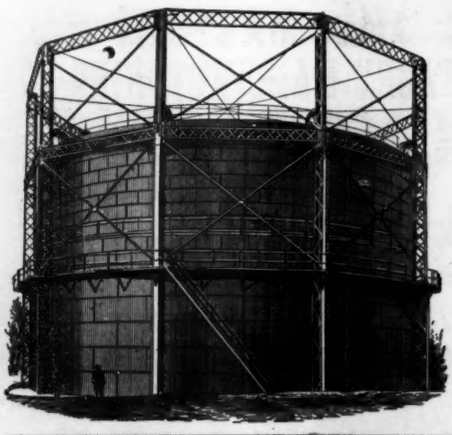

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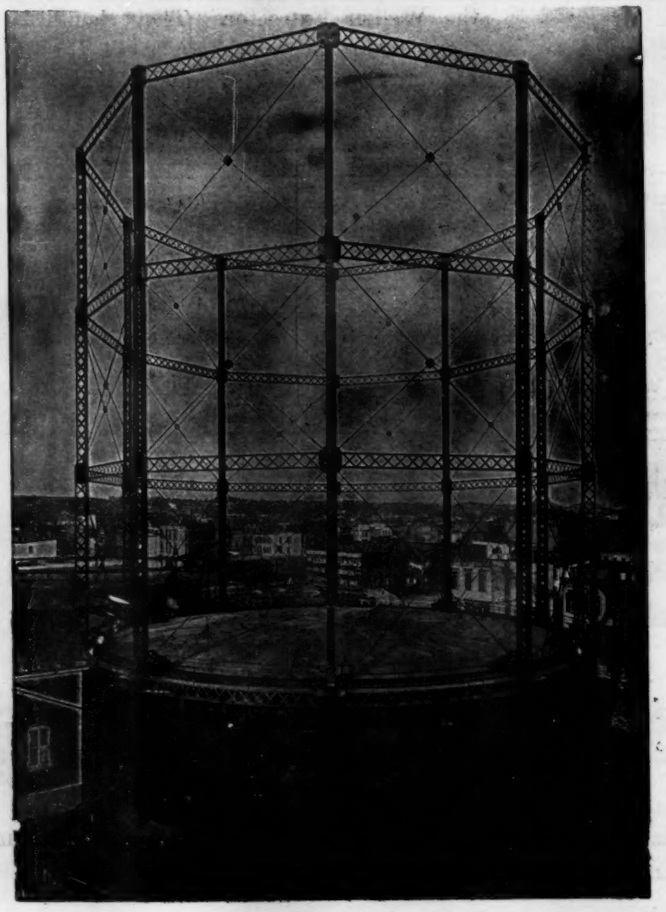

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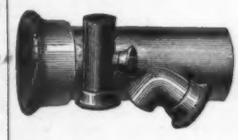

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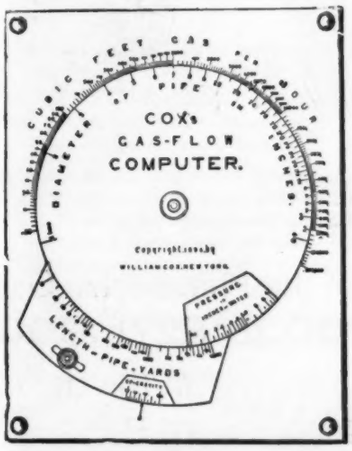

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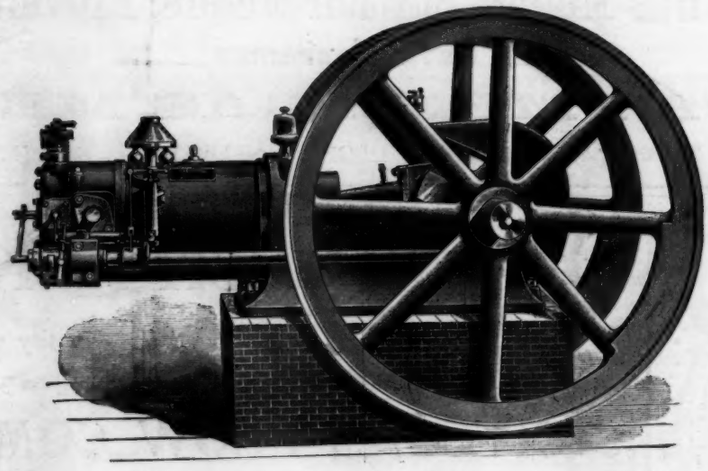

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